

SEARCH REQUEST FORM

Scientific and Technical Information Center

Din Lee

Requester's Full Name: 10/073, 223 Examiner #: 76060 Date: 7-22-04
Art Unit: 1752 Phone Number 301-2-1333 Serial Number: 10/073, 223
Mail Box and Bldg/Room Location: 9D64 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need. C

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Polymer, Resist Composition & Patterning Process

Inventors (please provide full names): Nishi, Tsunehiro; Nakagishima, Mutsuo; Tachibana, Seichiro; Funatsu, Kenji

Earliest Priority Filing Date: 2-13-02

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for a polymer of claim #9.

(it only needs to have those 2 repeat units circled).

STAFF USE ONLY

| | Type of Search | Vendors and cost where applicable |
|---------------------------------|-----------------------|-----------------------------------|
| Searcher: R. Fuller | NA Sequence (#) _____ | STN _____ |
| Searcher Phone #: _____ | AA Sequence (#) _____ | Dialog _____ |
| Searcher Location: _____ | Structure (#) 4 | Questel/Orbit _____ |
| Date Searcher Picked Up: _____ | Bibliographic _____ | Dr. Link _____ |
| Date Completed: 7/22/04 | Litigation _____ | Lexis/Nexis _____ |
| Searcher Prep & Review Time: 20 | Fulltext _____ | Sequence Systems _____ |
| Clerical Prep Time: _____ | Patent Family _____ | WWW/Internet _____ |
| Online Time: 30 | Other _____ | Other (specify) _____ |

=> FILE REG

FILE 'REGISTRY' ENTERED AT 17:24:07 ON 22 JUL 2004
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STRUCTURE FILE UPDATES: 21 JUL 2004 HIGHEST RN 714195-59-2
DICTIONARY FILE UPDATES: 21 JUL 2004 HIGHEST RN 714195-59-2

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 6, 2004

Please note that search-term pricing does apply when
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more
information enter HELP PROP at an arrow prompt in the file or refer
to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> FILE HCAPLU

FILE 'HCAPLUS' ENTERED AT 17:24:12 ON 22 JUL 2004
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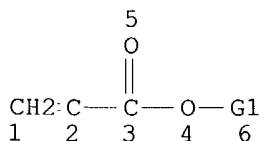
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FILE COVERS 1907 - 22 Jul 2004 VOL 141 ISS 4
FILE LAST UPDATED: 21 Jul 2004 (20040721/ED)

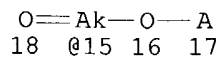
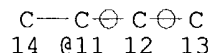
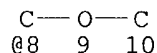
This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> D QUE

L74 SCR 2043
L76 STR



Cy @7



*19,699 polymers from
this query*

VAR G1=7/8/11/15

NODE ATTRIBUTES:

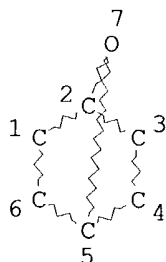
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NSPEC IS RC AT 17
CONNECT IS E1 RC AT 18
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GGCAT IS SAT AT 7
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 18

STEREO ATTRIBUTES: NONE

L79 19699 SEA FILE=REGISTRY SSS FUL L76 AND L74
L91 STR



*Subset search with
query covering claim 9
92 polymers*

NODE ATTRIBUTES:

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STEREO ATTRIBUTES: NONE

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L94 32 SEA FILE=HCAPLUS ABB=ON L93
L95 28 SEA FILE=HCAPLUS ABB=ON L94 (L) (PREP OR SPN OR IMF) /RL
L96 27 SEA FILE=HCAPLUS ABB=ON L95 (L) ?RESIST?

27 CA references

=> D L96 ALL 1-27 HITSTR

L96 ANSWER 1 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2004:261017 HCAPLUS
 DN 140:311986
 ED Entered STN: 31 Mar 2004
 TI Ester compounds, polymers, resist compositions and patterning process
 IN Hasegawa, K.; Kinsho, T.; Watanabe, T.
 PA Shin-Etsu Chemical Co., Ltd., Japan
 SO Eur. Pat. Appl., 48 pp.
 CODEN: EPXXDW
 DT Patent
 LA English
 IC ICM C08F020-30
 ICS C08F032-08; G03F007-039
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 35, 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | EP 1403295 | A2 | 20040331 | EP 2003-256075 | 20030926 |
| | EP 1403295 | A3 | 20040414 | | |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK | | | | |
| | JP 2004143153 | A2 | 20040520 | JP 2003-330904 | 20030924 |
| | US 2004068124 | A1 | 20040408 | US 2003-671948 | 20030929 |
| PRAI | JP 2002-285161 | A | 20020930 | | |
| OS | MARPAT 140:311986 | | | | |

AB The present invention relates to novel ester compds. having formula:
 $\text{AlC(=O)OCR1R2A2-R3}$ (A1 = polymerizable functional group having a double bond; A2 = furan-diyl, tetrahydrofurandiyl or oxa-norbornane-diyl; R1,2 = monovalent hydrocarbon group, or R1 and R2 may bond together to form an aliphatic hydrocarbon ring with the carbon atom; R3 = hydrogen or a monovalent hydrocarbon group which may contain a hetero atom are polymerizable into polymers). Resist compns. comprising the polymers are sensitive to high-energy radiation, have an improved sensitivity, resolution, and etching resistance, and lend themselves to micropatterning with electron beams or deep-UV rays.

ST ester compd polymer photoresist compn photolithog

IT Photolithography

(deep UV; ester compds., polymers, resist compns. and patterning process)

IT Photoresists

(ester compds., polymers, resist compns. and patterning process)

IT 461671-54-5P 676456-68-1P 676456-69-2P 676456-70-5P 676456-71-6P
 676456-72-7P 676456-73-8P 676456-74-9P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(ester compds. for polymers and photoresist compns.)

IT 676456-75-0P **676456-76-1P 676456-77-2P**

676456-78-3P 676456-79-4P 676456-80-7P

676456-81-8P

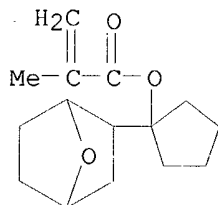
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(Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

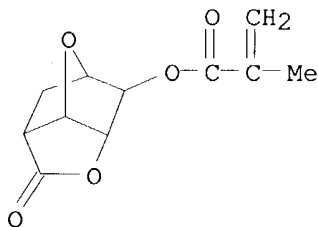
(ester compds. for polymers and **photoresist** compns.)

IT 110-52-1, 1,4-Dibromobutane 542-92-7, Cyclopentadiene, reactions
 814-68-6, 2-Propenoyl chloride 920-46-7, Methacrylic chloride
 16874-34-3 21987-32-6

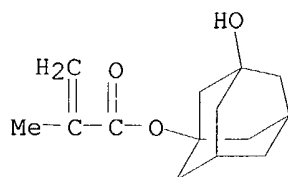
RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of ester compds. for polymers and photoresist compns.)
 IT 90646-72-3P 676456-82-9P 676456-83-0P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (preparation of ester compds. for polymers and photoresist compns.)
 IT 676456-76-1P 676456-77-2P 676456-78-3P
 676456-79-4P 676456-80-7P
 RL: PRP (Properties); SPN (Synthetic preparation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)
 (ester compds. for polymers and photoresist compns.)
 RN 676456-76-1 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-
 yl ester, polymer with 3-hydroxytricyclo[3.3.1.1^{3,7}]dec-1-yl
 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl
 2-methyl-2-propenoate (9CI) (CA INDEX NAME)
 CM 1
 CRN 676456-72-7
 CMF C15 H22 O3



CM 2
 CRN 274248-05-4
 CMF C11 H12 O5



CM 3
 CRN 115372-36-6
 CMF C14 H20 O3



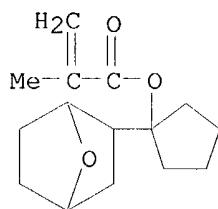
RN 676456-77-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl ester,
polymer with 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl
2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate
(9CI) (CA INDEX NAME)

CM 1

CRN 676456-72-7

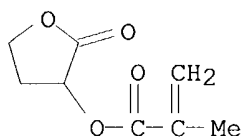
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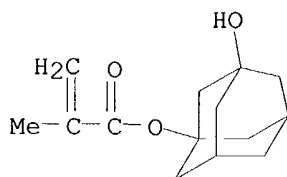
CMF C8 H10 O4



CM 3

CRN 115372-36-6

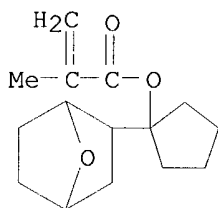
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 CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate, 3-hydroxytricyclo[3.3.1.3⁰]dec-1-yl 2-methyl-2-propenoate and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

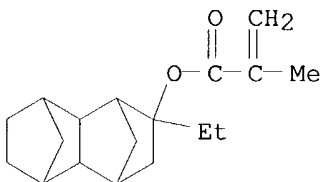
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CRN 676456-72-7
 CMF C15 H22 O3



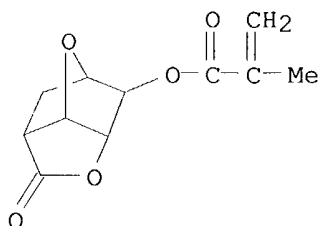
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CRN 485819-03-2
 CMF C18 H26 O2



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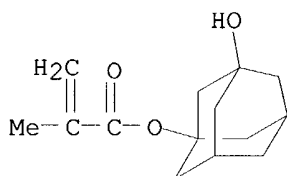
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CM 4

CRN 115372-36-6

CMF C14 H20 O3



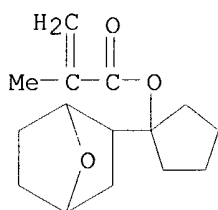
RN 676456-79-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with 3-hydroxytricyclo[3.3.1.1^{3,7}]dec-1-yl 2-methyl-2-propenoate, 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 676456-72-7

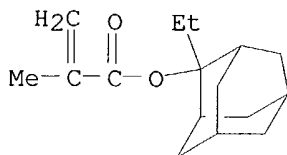
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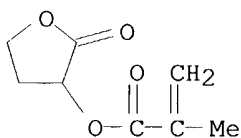
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CM 3

CRN 195000-66-9

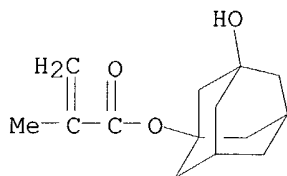
CMF C8 H10 O4



CM 4

CRN 115372-36-6

CMF C14 H20 O3



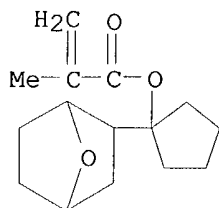
RN 676456-80-7 HCAPLUS

CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, tetrahydro-2-oxo-3-furanyl ester, polymer with 2,5-furandione and 1-(7-oxabicyclo[2.2.1]hept-2-yl)cyclopentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

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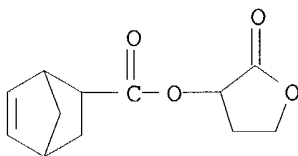
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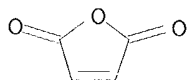
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CRN 264193-09-1
CMF C12 H14 O4



CM 3

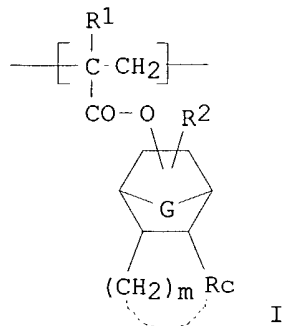
CRN 108-31-6
CMF C4 H2 O3



L96 ANSWER 2 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:989980 HCAPLUS
DN 140:33656
ED Entered STN: 19 Dec 2003
TI Chemical amplified photoresist compositions
IN Chen, Chi-Sheng; Li, Yen-Cheng; Cheng, Meng-Hsum
PA Everlight USA, Inc., USA
SO U.S. Pat. Appl. Publ., 18 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G03F007-039
ICS G03F007-30
NCL 430170000; 430270100; 430326000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 35, 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|----------|
| PI | US 2003232270 | A1 | 20031218 | US 2002-154826 | 20020528 |
| | US <u>6703178</u> | B2 | 20040309 | | |
| | CN 1462909 | A | 20031224 | CN 2003-110103 | 20030410 |
| PRAI | US 2002-154826 | A | 20020528 | | |
| GI | | | | | |



AB The present invention discloses a chemical amplified photoresist composition including a polymer I (R1 = H, haloalkyl group, C1-C4 alkyl group; R2 = hydroxyl group, C1-C8 alkoxy group, C1-C8 thioalkyl group; G = (CH₂)_n, O, S; n = 0, 1, 2, 3, 4; Rc = lactone group; m = 1, 2 or 3). The chemical amplified photoresist composition of the present invention can be applied to general lithog. processes, and particularly to the lithog. of ArF, KrF or the like light sources, and exhibit excellent resolution, figures and photosensitivity.

ST chem amplified photoresist compn

IT Photoresists

(chemical amplified photoresist compns.)

| | | | | | |
|----|---------------------|--------------|---------------------|---------------------|--------------|
| IT | 616871-88-6P | 616871-89-7P | 616871-91-1P | 616871-92-2P | 616871-98-8P |
| | 616872-00-5P | 616872-01-6P | 616872-02-7P | 616872-03-8P | |
| | 616872-04-9P | 616872-05-0P | 616872-06-1P | 616872-07-2P | |
| | 616872-09-4P | 616872-10-7P | 616872-11-8P | 616872-12-9P | |
| | 616872-13-0P | 616872-15-2P | 616872-16-3P | 616872-17-4P | 616872-19-6P |
| | 616872-20-9P | 616872-21-0P | 616872-22-1P | 634204-98-1P | 634205-01-9P |
| | 634205-04-2P | 634205-06-4P | 634205-09-7P | | |

RL: PRP (Properties); RCT (Reactant); **SPN (Synthetic preparation)**

; **PREP (Preparation)**; RACT (Reactant or reagent)

(preparation of polymer for chemical amplified photoresist compns.)

IT 64-17-5, Ethanol, reactions 67-56-1, Methanol, reactions 67-63-0, 2-Propanol, reactions 814-68-6, Acryloyl chloride 920-46-7, Methacryloyl chloride 1569-69-3, Cyclohexanethiol 126632-00-6 437754-43-3 632339-22-1

RL: RCT (Reactant); RACT (Reactant or reagent)

(preparation of polymer for chemical amplified photoresist compns.)

IT 616871-93-3P 616871-95-5P 616871-97-7P 616871-99-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of polymer for chemical amplified photoresist compns.)

IT **616872-00-5P 616872-06-1P 616872-12-9P**

RL: PRP (Properties); RCT (Reactant); **SPN (Synthetic preparation)**

; **PREP (Preparation)**; RACT (Reactant or reagent)

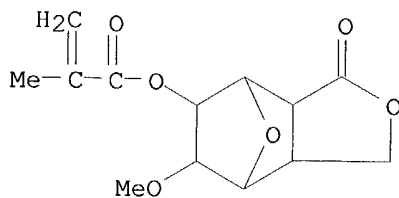
(preparation of polymer for chemical amplified photoresist compns.)

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CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate and octahydro-6-methoxy-3-oxo-4,7-epoxyisobenzofuran-5-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

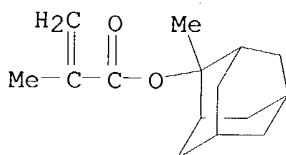
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CRN 616871-99-9
CMF C13 H16 O6



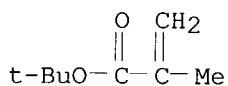
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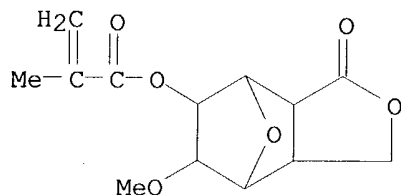
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RN 616872-06-1 HCAPLUS
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5-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

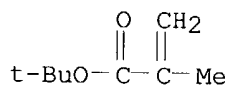
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CMF C13 H16 O6



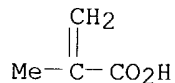
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CMF C8 H14 O2



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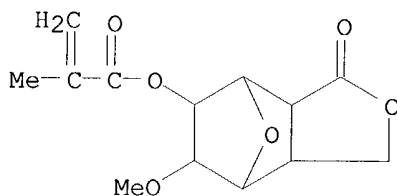
CRN 79-41-4
CMF C4 H6 O2



RN 616872-12-9 HCAPLUS
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2-methyl-2-propenoate, octahydro-6-methoxy-3-oxo-4,7-epoxyisobenzofuran-5-yl
2-methyl-2-propenoate and octahydro-5-methyl-4,7-methano-1H-inden-5-yl
2-methyl-2-propenoate (9CI) (CA INDEX NAME)

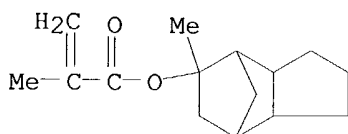
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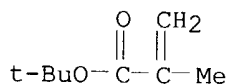
CM 2

CRN 280123-21-9
CMF C15 H22 O2



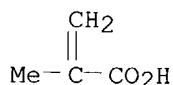
CM 3

CRN 585-07-9
CMF C8 H14 O2



CM 4

CRN 79-41-4
CMF C4 H6 O2



L96 ANSWER 3 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:950586 HCAPLUS
DN 140:21273
ED Entered STN: 07 Dec 2003
TI Resist composition and patterning process
IN Hatakeyama, Jun; Kurihara, Hideshi; Takeda, Takanobu; Watanabe, Osamu
PA Japan
SO U.S. Pat. Appl. Publ., 32 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G03F007-038
ICS G03F007-38; G03F007-40
NCL 430270100; 430330000; 430311000; 430313000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 35, 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|------|----------|-----------------|----------|
| PI | US 2003224291 | A1 | 20031204 | US 2003-427939 | 20030502 |
| | JP 2004027210 | A2 | 20040129 | JP 2003-124633 | 20030430 |
| PRAI | JP 2002-130326 | A | 20020502 | | |
| AB | Chemical amplified pos. photoresist compns. comprises a polymer obtained by copolyng. a silicon-containing monomer with a polar monomer having a value of LogP or c-LogP of up to 0.6 and optionally hydroxystyrene, a photoacid generator and an organic solvent are sensitive to high-energy radiation and have a high sensitivity and resolution at a wavelength of less than 300 nm and improved resistance to oxygen plasma etching. | | | | |
| ST | photoresist compn patterning process | | | | |
| IT | Positive photoresists (resist composition and patterning process) | | | | |
| IT | 630417-20-8P 630417-22-0P 630417-24-2P | | | | |

630417-26-4P

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)

(photoresist composition for patterning process)

IT **630417-20-8P 630417-22-0P 630417-24-2P**

630417-26-4P

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)

(photoresist composition for patterning process)

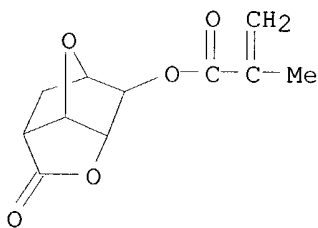
RN 630417-20-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 4-ethenylphenol and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 274248-05-4

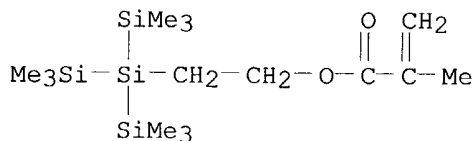
CMF C11 H12 O5



CM 2

CRN 211369-53-8

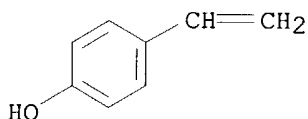
CMF C15 H36 O2 Si4



CM 3

CRN 2628-17-3

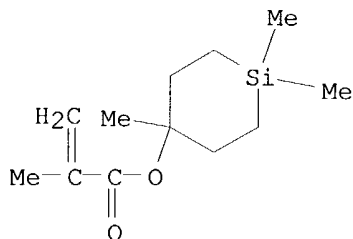
CMF C8 H8 O



RN 630417-22-0 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 4-ethenylphenol and 1,1,4-trimethylsilacyclohex-4-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

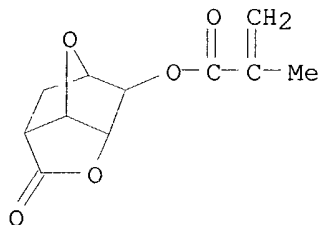
CM 1

CRN 344327-80-6
 CMF C12 H22 O2 Si



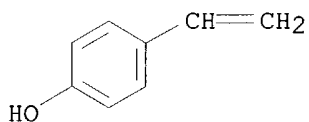
CM 2

CRN 274248-05-4
 CMF C11 H12 O5



CM 3

CRN 2628-17-3
 CMF C8 H8 O

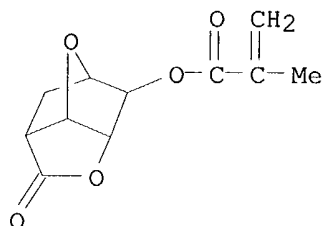


RN 630417-24-2 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with 4-ethenylphenol, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 2-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 274248-05-4

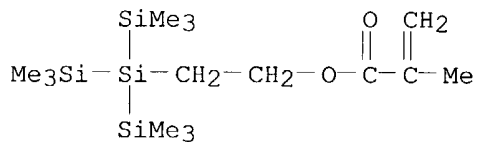
CMF C11 H12 O5



CM 2

CRN 211369-53-8

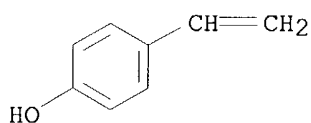
CMF C15 H36 O2 Si4



CM 3

CRN 2628-17-3

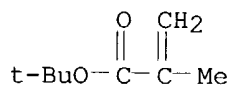
CMF C8 H8 O



CM 4

CRN 585-07-9

CMF C8 H14 O2



RN 630417-26-4 HCAPLUS

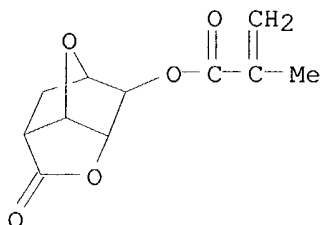
CN 2-Propenoic acid, 2-methyl-, 1,1-dimethylethyl ester, polymer with
4-ethenylphenol, 3-(2,4,4,6,6,8,8-heptamethylcyclotetrasiloxan-2-yl)propyl

2-methyl-2-propenoate and hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl
2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 274248-05-4

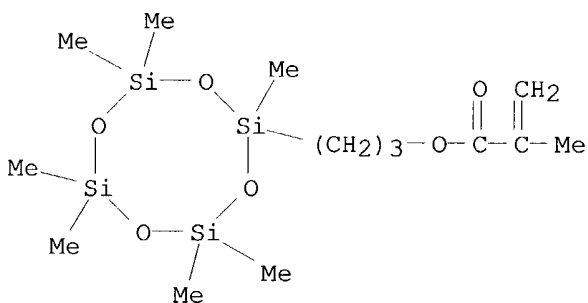
CMF C11 H12 O5



CM 2

CRN 110867-24-8

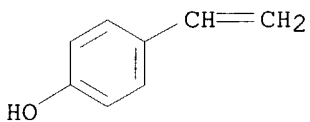
CMF C14 H32 O6 Si4



CM 3

CRN 2628-17-3

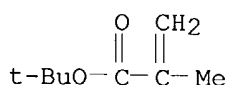
CMF C8 H8 O



CM 4

CRN 585-07-9

CMF C8 H14 O2



L96 ANSWER 4 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:930819 HCAPLUS

DN 140:10628

ED Entered STN: 28 Nov 2003

TI Novel esters, polymers, resist compositions and patterning process

IN Harada, Yuji; Hatakeyama, Jun; Kawai, Yoshio; Sasago, Masaru; Endo, Masayuki; Kishimura, Shinji; Maeda, Kazuhiko; Ootani, Michitaka; Komoriya, Haruhiko

PA Japan

SO U.S. Pat. Appl. Publ., 31 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM G03F007-038

ICS G03F007-38; G03F007-40; G03F007-30

NCL 430270100; 430905000; 430907000; 430330000; 430325000

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38, 76

FAN.CNT 1

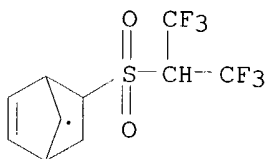
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---|--------------|--|---------------------|--|
| PI | US 2003219678 | A1 | 20031127 | US 2003-395268 | 20030325 |
| | JP 2004002725 | A2 | 20040108 | JP 2003-75440 | 20030319 |
| PRAI | JP 2002-83943 | A | 20020325 | | |
| | JP 2002-84093 | A | 20020325 | | |
| OS | MARPAT 140:10628 | | | | |
| AB | A resist composition comprising a base polymer having a fluorinated sulfonate or fluorinated sulfone introduced therein is sensitive to high-energy radiation, has excellent transparency, contrast and adherence, and is suited for lithog. microprocessing. | | | | |
| ST | ester polymer photoresist compn patterning process | | | | |
| IT | Photoresists | | | | |
| | (novel esters, polymers for resist compns. and patterning process) | | | | |
| IT | 628313-70-2DP, reaction product with di-Bu dicarbonate 628313-70-2P | | | | |
| | 628313-71-3P | 628313-72-4P | 628313-73-5DP, reaction product with di-Bu dicarbonate | 628313-73-5P | 628313-74-6P 628313-75-7P 628313-77-9P |
| | 628313-79-1P | 628313-80-4P | 628313-81-5P | 628313-83-7P | |
| | 628313-85-9P | | | | |
| | RL: PRP (Properties); SPN (Synthetic preparation) ; TEM (Technical or engineered material use); PREP (Preparation) ; USES (Uses) | | | | |
| | (novel esters, polymers for resist compns. and patterning process) | | | | |
| IT | 24424-99-5DP, Di-tert-Butyl dicarbonate, reaction product with hydroxy group containing copolymer | | | | |
| | RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) | | | | |
| | (novel esters, polymers for resist compns. and patterning process) | | | | |
| IT | 628313-69-9P | | | | |
| | RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) | | | | |
| | (preparation of novel esters, polymers for resist compns. and patterning process) | | | | |

process)
 IT 1622-32-8, 2-Chloroethanesulfonyl chloride 399518-71-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of novel esters, polymers for resist compns. and patterning process)
 IT 628313-83-7P 628313-85-9P
 RL: PRP (Properties); SPN (Synthetic preparation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)
 (novel esters, polymers for resist compns. and patterning process)
 RN 628313-83-7 HCAPLUS
 CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and 5-[[2,2,2-trifluoro-1-(trifluoromethyl)ethyl]sulfonyl]bicyclo[2.2.1]hept-2-ene (9CI) (CA INDEX NAME)

CM 1

CRN 628313-82-6

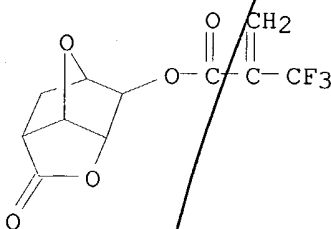
CMF C10 H10 F6 O2 S



CM 2

CRN 479084-31-6

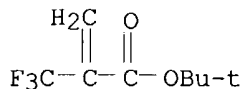
CMF C11 H9 F3 O5



CM 3

CRN 105935-24-8

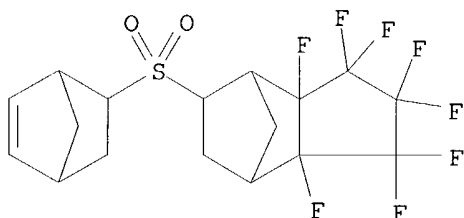
CMF C8 H11 F3 O2



RN 628313-85-9 HCAPLUS
 CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer
 with 5-(bicyclo[2.2.1]hept-5-en-2-ylsulfonyl)-1,1,2,2,3,3,3a,7a-
 octafluorooctahydro-4,7-methano-1H-indene and hexahydro-5-oxo-2,6-
 methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate (9CI) (CA
 INDEX NAME)

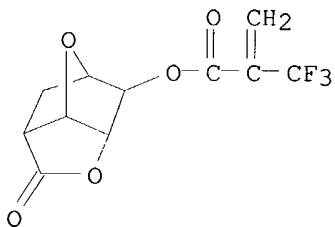
CM 1

CRN 628313-84-8
 CMF C17 H16 F8 O2 S



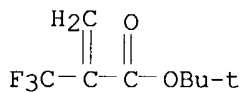
CM 2

CRN 479084-31-6
 CMF C11 H9 F3 O5



CM 3

CRN 105935-24-8
 CMF C8 H11 F3 O2



L96 ANSWER 5 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:912696 HCAPLUS
 DN 139:401548
 ED Entered STN: 21 Nov 2003
 TI Polymers, resist compositions and patterning process

IN Harada, Yuji; Hatakeyama, Jun; Kawai, Yoshio; Sasago, Masaru; Endo, Masayuki; Kishimura, Shinji; Maeda, Kazuhiko; Ootani, Michitaka; Komoriya, Haruhiko

PA Japan

SO U.S. Pat. Appl. Publ., 28 pp.

CODEN: USXXCO

DT Patent

LA English

IC ICM G03F007-20

ICS G03F007-38; G03F007-40; G03F007-004

NCL 430270100; 430296000; 430311000; 430327000; 430330000; 430326000; 430907000

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 35, 38, 76

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|----------|
| PI | US 2003215739 | A1 | 20031120 | US 2003-395256 | 20030325 |
| | JP 2004002724 | A2 | 20040108 | JP 2003-75374 | 20030319 |
| PRAI | JP 2002-83807 | A | 20020325 | | |
| | JP 2002-84033 | A | 20020325 | | |

AB A resist composition comprising a base polymer having a fluorinated sulfonate or fluorinated sulfone introduced therein is sensitive to high-energy radiation below 300 nm, has excellent transparency, contrast and adherence, and is suited for lithog. microprocessing.

ST polymer photoresist compn photolithog patterning process

IT Photolithography

Photoresists

(polymers for resist compns. and patterning process)

IT 625392-80-5P 625392-82-7P 625392-84-9P 625392-86-1P 625392-88-3P

625392-90-7P **625392-91-8P 625392-92-9P**

625392-93-0P 625392-94-1P 625416-44-6P 625416-45-7P

625416-47-9P 625416-48-0P 625416-49-1P 625416-51-5P

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM

(Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(polymers for **resist** compns. and patterning process)

IT **625392-91-8P 625392-92-9P 625392-93-0P**

625392-94-1P

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM

(Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(polymers for **resist** compns. and patterning process)

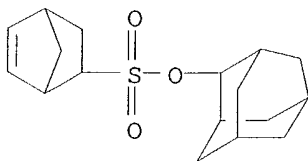
RN 625392-91-8 HCAPLUS

CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and tricyclo[3.3.1.1^{3,7}]dec-2-yl bicyclo[2.2.1]hept-5-ene-2-sulfonate (9CI) (CA INDEX NAME)

CM 1

CRN 625392-81-6

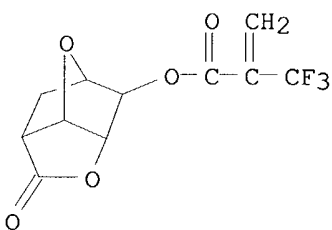
CMF C17 H24 O3 S



CM 2

CRN 479084-31-6

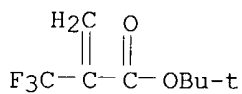
CMF C11 H9 F3 O5



CM 3

CRN 105935-24-8

CMF C8 H11 F3 O2



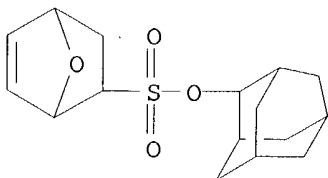
RN 625392-92-9 HCAPLUS

CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and tricyclo[3.3.1.1^{3,7}]dec-2-yl 7-oxabicyclo[2.2.1]hept-5-ene-2-sulfonate (9CI) (CA INDEX NAME)

CM 1

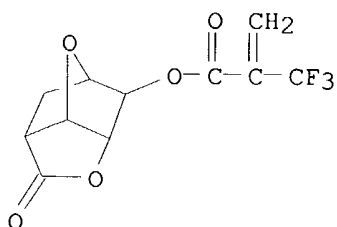
CRN 625392-87-2

CMF C16 H22 O4 S



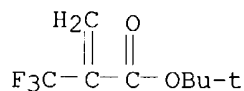
CM 2

CRN 479084-31-6
CMF C11 H9 F3 O5



CM 3

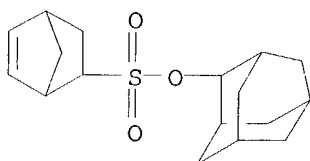
CRN 105935-24-8
CMF C8 H11 F3 O2



RN 625392-93-0 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and tricyclo[3.3.1.1^{3,7}]dec-2-yl bicyclo[2.2.1]hept-5-ene-2-sulfonate (9CI) (CA INDEX NAME)

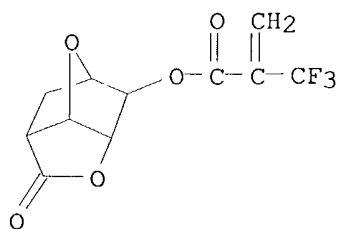
CM 1

CRN 625392-81-6
CMF C17 H24 O3 S



CM 2

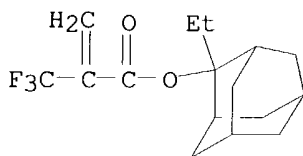
CRN 479084-31-6
CMF C11 H9 F3 O5



CM 3

CRN 444168-44-9

CMF C16 H21 F3 O2



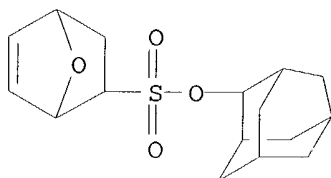
RN 625392-94-1 HCAPLUS

CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and tricyclo[3.3.1.1^{3,7}]dec-2-yl 7-oxabicyclo[2.2.1]hept-5-ene-2-sulfonate (9CI) (CA INDEX NAME)

CM 1

CRN 625392-87-2

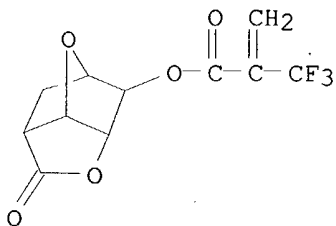
CMF C16 H22 O4 S



CM 2

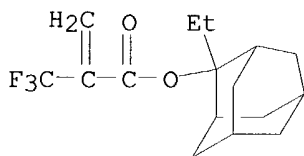
CRN 479084-31-6

CMF C11 H9 F3 O5



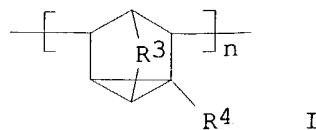
CM 3

CRN 444168-44-9
CMF C16 H21 F3 O2

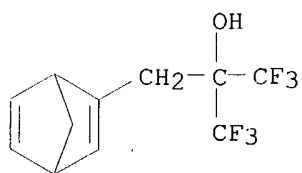


L96 ANSWER 6 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:527558 HCAPLUS
DN 139:108695
ED Entered STN: 10 Jul 2003
TI Acrylic fluoropolymers, their chemically amplified photoresists with good vacuum UV transparency and etching resistance, and pattern formation using them
IN Hatakeyama, Jun; Harada, Yuji; Kawai, Yoshio; Sasako, Masaru; Endo, Masataka; Kishimura, Shinji; Maeda, Kazuhiko; Otani, Michitaka; Komoritani, Haruhiko
PA Shin-Etsu Chemical Industry Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.; Central Glass Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 34 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-22
ICS C08F232-00; C08F234-00; G03F007-039; H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2003192737 | A2 | 20030709 | JP 2001-393359 | 20011226 |
| PRAI | JP 2001-393359 | | 20011226 | | |
| GI | | | | | |

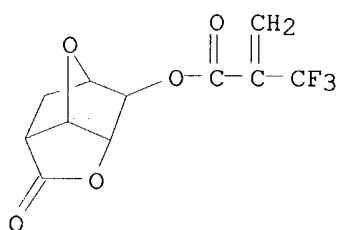


- AB The invention relates to polymers having repeating units of
[CR1(CO2R2)CH2]m (R1 = F, C1-15-fluoroalkyl; R2 = acid-unstabilizable
group; 0 < m < 1) and I [R3 = methylene, ethylene, O, S; R4 = (CH2)aCO2R5,
(CH2)aCR62OR7; R5, R7 = acid-unstabilizable group, adhesive group, H,
C1-20-alkyl, fluoroalkyl; R6 = H, F, C1-20-alkyl, fluoroalkyl; 0 < n < 1;
0 < m + n ≤ 1; a = 0-6]. The photoresists are patterned by F2
laser, Ar2 laser, or soft X ray.
- ST pos photoresist chem amplification vacuum UV; cycloolefin acrylic
fluoropolymer UV laser photoresist; etching resistance UV photoresist
photolithog
- IT Positive photoresists
(UV; chemical amplified photoresists with good vacuum UV transparency and
etching resistance)
- IT Fluoropolymers, preparation
RL: IMF (Industrial manufacture); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(acrylic; chemical amplified photoresists with good vacuum UV transparency
and etching resistance)
- IT Photolithography
(chemical amplified photoresists with good vacuum UV transparency and
etching resistance)
- IT 557771-65-0P **557771-66-1P** 557771-67-2P 557771-69-4P
557771-71-8P
RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered
material use); **PREP (Preparation)**; USES (Uses)
(chemical amplified **photoresists** with good vacuum UV
transparency and etching **resistance**)
- IT **557771-66-1P**
RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered
material use); **PREP (Preparation)**; USES (Uses)
(chemical amplified **photoresists** with good vacuum UV
transparency and etching **resistance**)
- RN 557771-66-1 HCAPLUS
- CN 2-Propenoic acid, 2-(trifluoromethyl)-, hexahydro-5-oxo-2,6-
methanofuro[3,2-b]furan-3-yl ester, polymer with α,α-
bis(trifluoromethyl)bicyclo[2.2.1]hepta-2,5-diene-2-ethanol and
2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-(trifluoromethyl)-2-propenoate
(9CI) (CA INDEX NAME)
- CM 1
- CRN 557771-64-9
- CMF C11 H10 F6 O



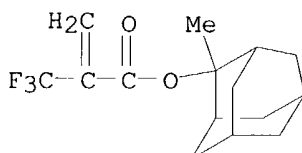
CM 2

CRN 479084-31-6
CMF C11 H9 F3 O5



CM 3

CRN 188739-86-8
CMF C15 H19 F3 O2

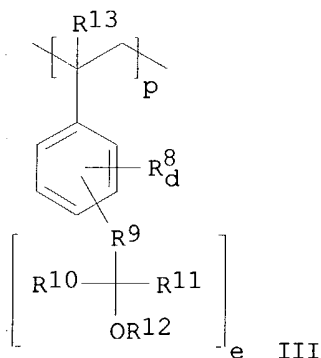
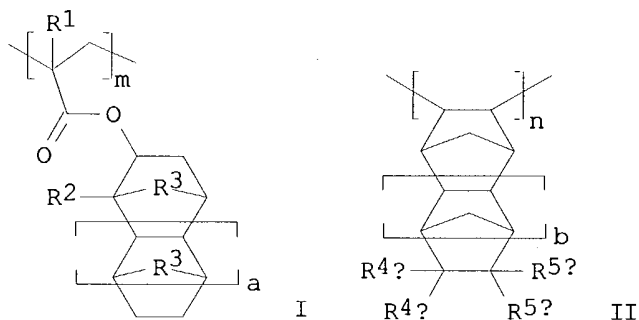


L96 ANSWER 7 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:527557 HCAPLUS
DN 139:108694
ED Entered STN: 10 Jul 2003
TI Polymers having acid-dissociable groups, chemically amplified positive photoresists containing them with good transparency to vacuum UV, and their pattern formation
IN Hatakeyama, Jun; Harada, Yuji; Kawai, Yoshio; Sasako, Masaru; Endo, Masataka; Kishimura, Shinji; Maeda, Kazuhiko; Otani, Michitaka; Komoritani, Haruhiko
PA Shin-Etsu Chemical Industry Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.; Central Glass Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 38 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-10

ICS C08F212-14; C08F232-08; G03F007-039; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|-----------------|-----------------|----------|
| PI | JP 2003192734 | A2 | <u>20030709</u> | JP 2001-393328 | 20011226 |
| PRAI | JP 2001-393328 | | 20011226 | | |
| GI | | | | | |

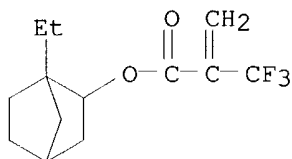


- AB The invention relates to polymers having repeating units of I (R1 = F, C1-15-fluoroalkyl; R2 = C1-15-alkyl, fluoroalkyl; R3 = methylene, ethylene, O, S; a = 0-2; 0 < m < 1) and II [R4a, R4b, R5a, R5b = H, OH, C1-20-alkyl, fluoroalkyl, (CH2)cCO2R6, (CH2)cCR72OR6; R6 = acid-unstabilizable group, adhesive group, H, C1-20-alkyl, fluoroalkyl, etc.; R7 = H, F, C1-20-alkyl, fluoroalkyl; 0 < n < 1; 0 < m + n ≤ 1; b = 0, 1; c = 0-6] or I and III (R8 = R7; R9 = single bond, C1-4-hydrocarbylene; R10, R11 = H, F, C1-4-alkyl, fluoroalkyl, either of them containing F; R12 = H, C1-10-alkyl, acid-unstabilizable group; R13 = H, Me; 0 < p < 1; 0 < m + p ≤ 1; d = 0-4; e = 1-3). The photoresists are patterned by F2 laser, Ar2 laser, and soft X ray.
- ST pos photoresist chem amplification vacuum UV; cycloolefin acrylic fluoropolymer UV laser photoresist; etching resistance UV laser photoresist photolithog
- IT Positive photoresists
 (UV; chemical amplified photoresists with good vacuum UV transparency and

- etching resistance)
- IT Fluoropolymers, preparation
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (acrylic; chemical amplified photoresists with good vacuum UV transparency and etching resistance)
- IT Photolithography
 (chemical amplified photoresists with good vacuum UV transparency and etching resistance)
- IT 557103-19-2P 557103-21-6P 557103-23-8P **557103-24-9P**
557103-25-0P 557103-26-1P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (chemical amplified photoresists with good vacuum UV transparency and etching resistance)
- IT 381-98-6, α -Trifluoromethylacrylic acid 2146-40-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (chemical amplified photoresists with good vacuum UV transparency and etching resistance)
- IT 557103-18-1P
 RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (monomer; chemical amplified photoresists with good vacuum UV transparency and etching resistance)
- IT **557103-24-9P 557103-25-0P 557103-26-1P**
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (chemical amplified photoresists with good vacuum UV transparency and etching resistance)
- RN 557103-24-9 HCAPLUS
- CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with α,α -bis(trifluoromethyl)bicyclo[2.2.1]hept-5-ene-2-ethanol and hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate (9CI) (CA INDEX NAME)

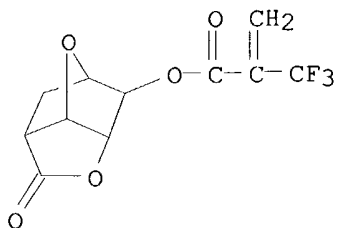
CM 1

CRN 557103-18-1
 CMF C13 H17 F3 O2



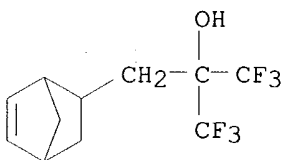
CM 2

CRN 479084-31-6
 CMF C11 H9 F3 O5



CM 3

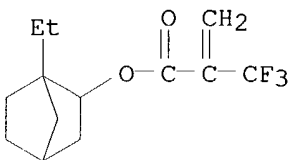
CRN 196314-61-1
CMF C11 H12 F6 O



RN 557103-25-0 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with α,α -bis(trifluoromethyl)bicyclo[2.2.1]hept-5-ene-2-ethanol, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-(trifluoromethyl)-2-propenoate (9CI) (CA INDEX NAME)

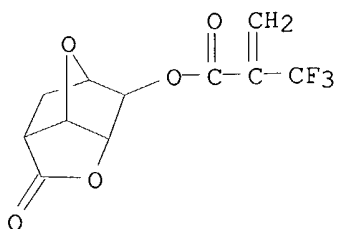
CM 1

CRN 557103-18-1
CMF C13 H17 F3 O2



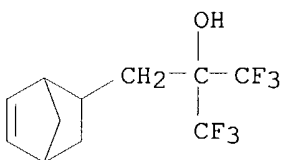
CM 2

CRN 479084-31-6
CMF C11 H9 F3 O5



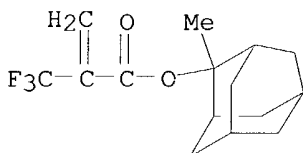
CM 3

CRN 196314-61-1
CMF C11 H12 F6 O



CM 4

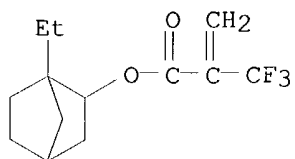
CRN 188739-86-8
CMF C15 H19 F3 O2



RN 557103-26-1 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with α,α -bis(trifluoromethyl)bicyclo[2.2.1]hept-5-ene-2-ethanol, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and 1,1,2,2,3,3,3a,7a-octafluorooctahydro-4,7-methano-1H-inden-5-yl 2-(trifluoromethyl)-2-propenoate (9CI) (CA INDEX NAME)

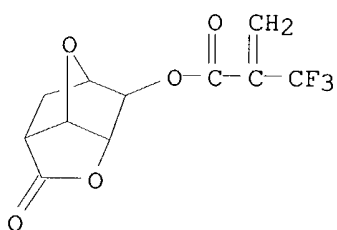
CM 1

CRN 557103-18-1
CMF C13 H17 F3 O2



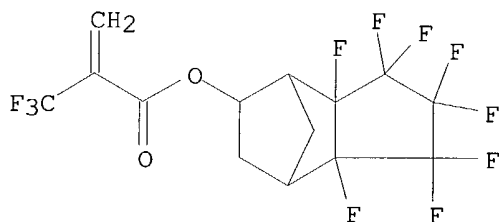
CM 2

CRN 479084-31-6
CMF C11 H9 F3 O5



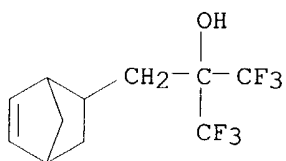
CM 3

CRN 478363-29-0
CMF C14 H9 F11 O2



CM 4

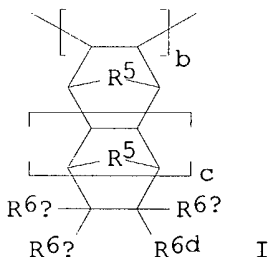
CRN 196314-61-1
CMF C11 H12 F6 O



L96 ANSWER 8 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:525433 HCAPLUS
 DN 139:108690
 ED Entered STN: 10 Jul 2003
 TI Chemically amplified positive photoresists, photolithography thereon, and polymers therefor
 IN Harada, Yuji; Hatakeyama, Jun; Kawai, Yoshio; Sasako, Masaru; Endo, Masataka; Kishimura, Shinji; Maeda, Kazuhiko; Otani, Michitaka; Komoritani, Haruhiko
 PA Shin-Etsu Chemical Industry Co., Ltd., Japan; Matsushita Electric Industrial Co., Ltd.; Central Glass Co., Ltd.
 SO Jpn. Kokai Tokkyo Koho, 27 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C08F220-10
 ICS C08F234-00; G03F007-039; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2003192733 | A2 | 20030709 | JP 2001-393302 | 20011226 |
| | US 2003165773 | A1 | 20030904 | US 2002-328007 | 20021226 |
| PRAI | JP 2001-393302 | A | 20011226 | | |
| GI | | | | | |



AB The photoresists, showing superior high sensitivity to ≤ 170 -nm actinic rays, comprise polymers of Mw 1,000-500,000 having mer units of [CR1R2CR3(CO2R4)]a and I [R1, R2 = H, F, C1-20 (fluoro)alkyl; R3 = F, C1-20 (fluoro)alkyl; R4 = acid-labile group, coupling group, C1-20 (fluoro)alkyl; R5 = O, S; R6a-R6d = H, OH, (CH2)dCR72(OR8), (CH2)dCO2R8 [R7 = H, F, C1-20 (fluoro)alkyl; R8 = H, acid-labile group, coupling group, C1-20 (fluoro)alkyl], C1-20 (fluoro)alkyl; $0 < a, b < 1$; $0 < a + b \leq 1$; $c = 0, 1$; $0 \leq d \leq 6$], acid generators, and organic solvents. The photoresists are patternwise exposed to 100-180-nm or 1-30-nm high-energy beams (e.g., F2 laser beams, Ar2 laser beams, soft x rays) and developed (after post-exposure baking).

ST fluoromethylacrylate acid labile photoresist polymer oxygen incorporated amplified photoresist acrylic norbornene polymer oxygen incorporated

IT Fluoropolymers, processes
 RL: CPS (Chemical process); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)
 (acrylic; chemical amplified pos. photoresists showing superior high

sensitivity to high-energy beams)

IT Photolithography
(chemical amplified pos. photoresists showing superior high sensitivity to high-energy beams)

IT Positive photoresists
(chemical amplified; chemical amplified pos. photoresists showing superior high sensitivity to high-energy beams)

IT X-ray lithography
(soft x ray; chemical amplified pos. photoresists showing superior high sensitivity to high-energy beams)

IT 557104-44-6P 557104-46-8P **557104-47-9P** 557104-48-0P
557104-49-1P 557104-50-4P 557104-52-6P
557104-65-1P
RL: CPS (Chemical process); **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(chemical amplified pos. **photoresists** showing superior high sensitivity to high-energy beams)

IT **557104-47-9P 557104-49-1P 557104-50-4P**
557104-52-6P 557104-65-1P
RL: CPS (Chemical process); **IMF (Industrial manufacture)**; PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PREP (Preparation)**; PROC (Process); USES (Uses)
(chemical amplified pos. **photoresists** showing superior high sensitivity to high-energy beams)

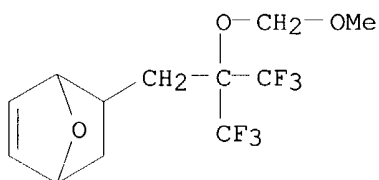
RN 557104-47-9 HCAPLUS

CN 2-Propenoic acid, 2-(trifluoromethyl)-, 1,1-dimethylethyl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-(trifluoromethyl)-2-propenoate and 5-[3,3,3-trifluoro-2-(methoxymethoxy)-2-(trifluoromethyl)propyl]-7-oxabicyclo[2.2.1]hept-2-ene (9CI) (CA INDEX NAME)

CM 1

CRN 557104-45-7

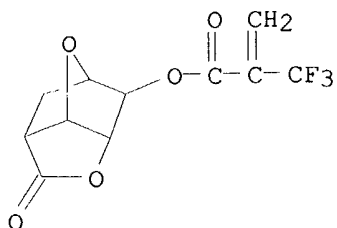
CMF C12 H14 F6 O3



CM 2

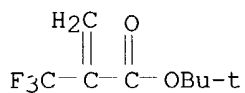
CRN 479084-31-6

CMF C11 H9 F3 O5



CM 3

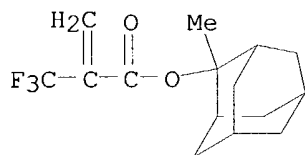
CRN 105935-24-8
CMF C8 H11 F3 O2



RN 557104-49-1 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with α,α -dimethyl-7-oxabicyclo[2.2.1]hept-5-ene-2-methanol (9CI) (CA INDEX NAME)

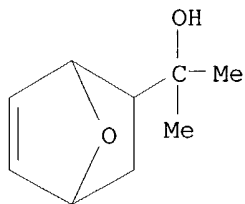
CM 1

CRN 188739-86-8
CMF C15 H19 F3 O2



CM 2

CRN 90765-54-1
CMF C9 H14 O2

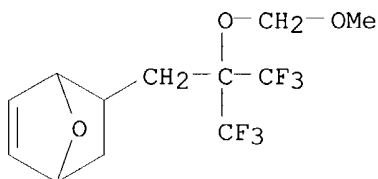


RN 557104-50-4 HCAPLUS

CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with 5-[3,3,3-trifluoro-2-(methoxymethoxy)-2-(trifluoromethyl)propyl]-7-oxabicyclo[2.2.1]hept-2-ene (9CI) (CA INDEX NAME)

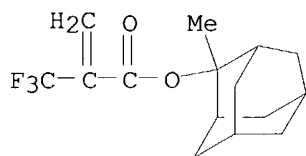
CM 1

CRN 557104-45-7
CMF C12 H14 F6 O3



CM 2

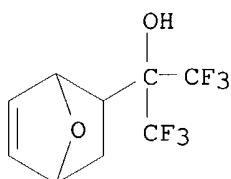
CRN 188739-86-8
CMF C15 H19 F3 O2



RN 557104-52-6 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with α,α -bis(trifluoromethyl)-7-oxabicyclo[2.2.1]hept-5-ene-2-methanol and 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-(trifluoromethyl)-2-propenoate (9CI) (CA INDEX NAME)

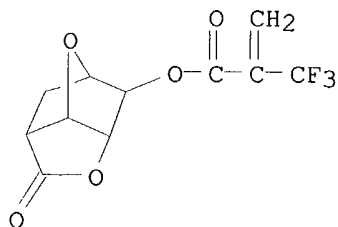
CM 1

CRN 557104-51-5
CMF C9 H8 F6 O2



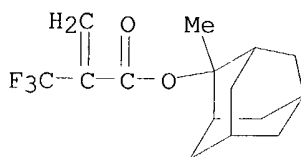
CM 2

CRN 479084-31-6
CMF C11 H9 F3 O5



CM 3

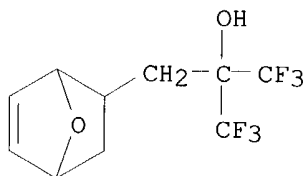
CRN 188739-86-8
CMF C15 H19 F3 O2



RN 557104-65-1 HCAPLUS
CN 2-Propenoic acid, 2-(trifluoromethyl)-, 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with α,α -bis(trifluoromethyl)-7-oxabicyclo[2.2.1]hept-5-ene-2-ethanol (9CI) (CA INDEX NAME)

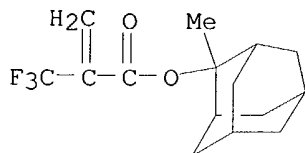
CM 1

CRN 557104-43-5
CMF C10 H10 F6 O2



CM 2

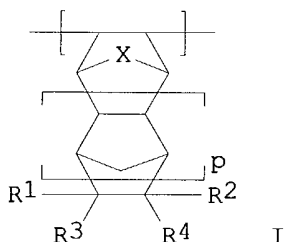
CRN 188739-86-8
CMF C15 H19 F3 O2



L96 ANSWER 9 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:353741 HCAPLUS
 DN 138:376396
 ED Entered STN: 09 May 2003
 TI Chemically amplified positive photoresists suppressing pattern shrinking
 for ArF excimer laser lithography
 IN Hashimoto, Kazuhiko; Uetani, Yasunori; Fujishima, Hiroaki; Yoshida, Isao
 PA Sumitomo Chemical Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 12 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM G03F007-039
 ICS G03F007-004; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 38
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2003131381 | A2 | 20030509 | JP 2001-302904 | 20010928 |
| PRAI | JP 2001-243895 | A | 20010810 | | |

GI



AB The photoresists contain alkali-insol. polymers which contain unit I [X = O, S, (m)ethylene; R₁, R₂ = H, C1-12 alkyl, acid-labile group; R₃, R₄ = H, C1-12 alkyl, acid-labile group, R₅CO₂R' (R₅ = direct bond, C1-12 alkylene; R' = H, C1-12 alkyl, acid-labile group), or alkyl-, lactone-, anhydride-, or ether-bearing ring; p = 0-2] and become soluble in aqueous alkalis upon acid action. The polymers, which can be prepared without metal-based catalysts, show little shrinkage upon exposure to electron beams in SEM observation.

ST amplified photoresist SEM observation pattern stability; fluoride laser transparent amplified etching photoresist; alicyclic acrylic polymer amplified pos photoresist

IT Positive photoresists
 (chemical amplified; chemical amplified pos. photoresists containing alicyclic

group-containing polymers and causing no pattern shrinking in SEM observation)

IT 521096-22-0P, exo-3,6-Epoxy-1,2,3,6-tetrahydrophthalic anhydride-2-methyl-2-adamantyl 5-norbornene-2-carboxylate copolymer 521096-24-2P 521096-26-4P 521096-27-5P 521096-28-6P 521096-29-7P 521096-30-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (chemical amplified pos. photoresists containing alicyclic group-containing polymers and causing no pattern shrinking in SEM observation)

IT 521096-27-5P 521096-28-6P 521096-29-7P 521096-30-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (chemical amplified pos. photoresists containing alicyclic group-containing polymers and causing no pattern shrinking in SEM observation)

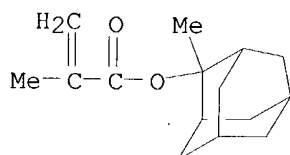
RN 521096-27-5 HCAPLUS

CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, polymer with 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 177080-67-0

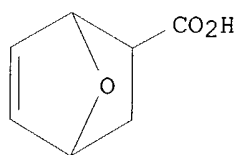
CMF C15 H22 O2



CM 2

CRN 24363-23-3

CMF C7 H8 O3

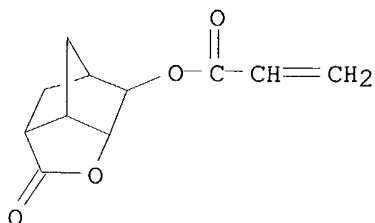


RN 521096-28-6 HCAPLUS

CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, polymer with hexahydro-2-oxo-3,5-methano-2H-cyclopenta[b]furan-6-yl 2-propenoate and 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

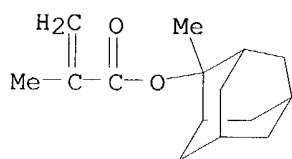
CM 1

CRN 242129-35-7
CMF C11 H12 O4



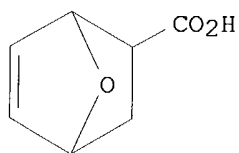
CM 2

CRN 177080-67-0
CMF C15 H22 O2



CM 3

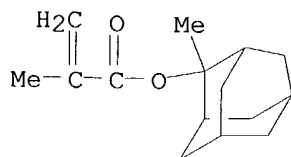
CRN 24363-23-3
CMF C7 H8 O3



RN 521096-29-7 HCAPLUS
CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, methyl ester, polymer
with 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate (9CI) (CA
INDEX NAME)

CM 1

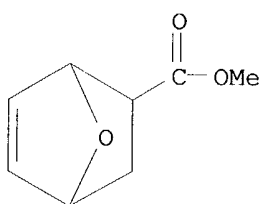
CRN 177080-67-0
CMF C15 H22 O2



CM 2

CRN 21987-33-7

CMF C8 H10 O3



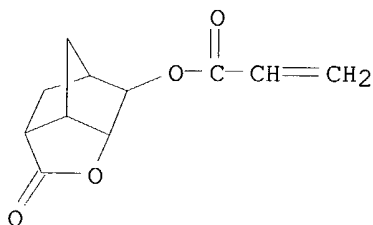
RN 521096-30-0 HCAPLUS

CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, polymer with
2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate and
hexahydro-2-oxo-3,5-methano-2H-cyclopenta[b]furan-6-yl 2-propenoate (9CI)
(CA INDEX NAME)

CM 1

CRN 242129-35-7

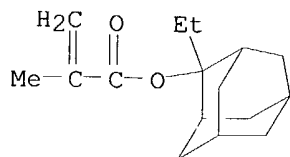
CMF C11 H12 O4



CM 2

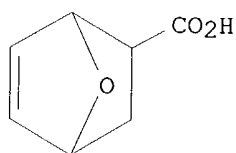
CRN 209982-56-9

CMF C16 H24 O2



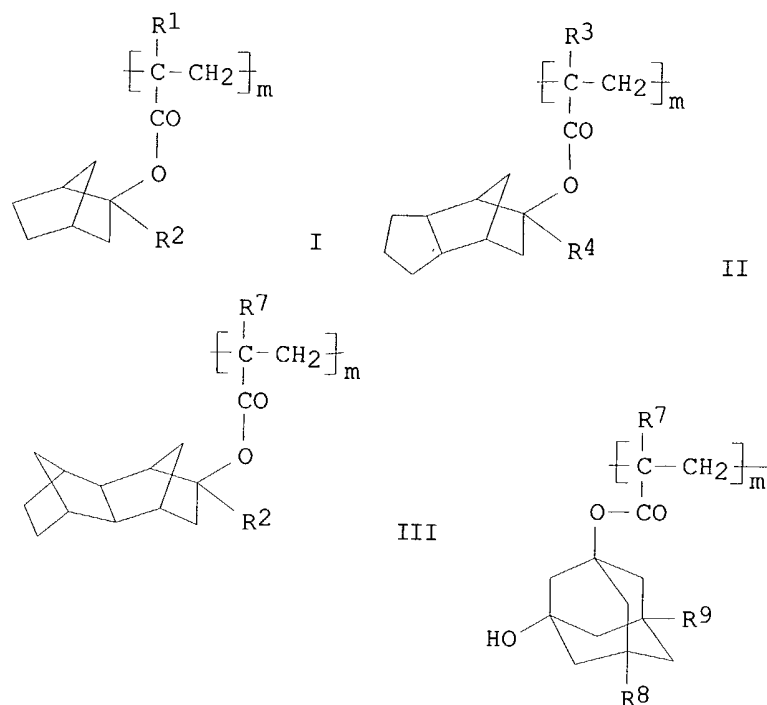
CM 3

CRN 24363-23-3
CMF C7 H8 O3



L96 ANSWER 10 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:222223 HCAPLUS
DN 138:262688
ED Entered STN: 21 Mar 2003
TI Polymer, photoresist material and patterning method
IN Nishi, Tsunehiro; Kinsho, Takeshi
PA Japan
SO U.S. Pat. Appl. Publ., 28 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G03F007-038
ICS G03F007-38; G03F007-40; G03F007-30
NCL 430270100; 430296000; 430330000; 430325000; 430910000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 35, 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | US 2003054290 | A1 | 20030320 | US 2002-200647 | 20020722 |
| | JP 2003113213 | A2 | 20030418 | JP 2002-210437 | 20020719 |
| PRAI | JP 2001-222455 | A | 20010724 | | |
| GI | | | | | |

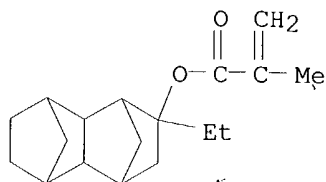


- AB Provided are a resist material having markedly high resolution and etching resistance of a practically usable level, and being useful for fine microfabrication; a patterning method using the resist material; and a polymer useful as a base resin for the resist material. More specifically, provided are a polymer having a weight-average mol. weight of 1,000-500,000, which comprises one or more repeating units selected from the group consisting of repeating units represented by formulas I-IV (R1,3,5,7 = H, methyl; R2,4,6 = C1-8 alkyl; R8,9 = H, hydroxy group); and a resist material containing the polymer.
- ST polymer photoresist material patterning
- IT Photolithography
Photoresists
(Polymer, resist material and patterning method)
- IT **485819-08-7P** 502697-95-2P 502697-96-3P 502697-97-4P
502697-98-5P 502698-00-2P 502698-02-4P 502698-03-5P
502698-04-6P 502698-05-7P
RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)
(Polymer, **resist** material for patterning method)
- IT **485819-08-7P 502698-04-6P**
RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)
(Polymer, **resist** material for patterning method)
- RN 485819-08-7 HCAPLUS
- CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 3-hydroxytricyclo[3.3.1.1^{3,7}]dec-1-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 485819-03-2

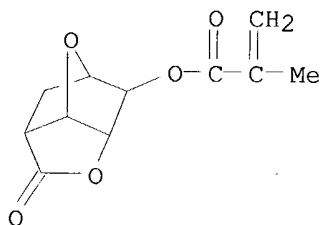
CMF C18 H26 O2



CM 2

CRN 274248-05-4

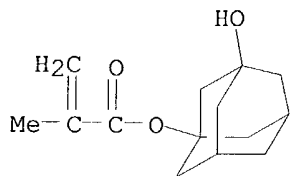
CMF C11 H12 O5



CM 3

CRN 115372-36-6

CMF C14 H20 O3



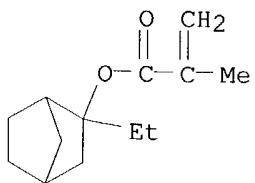
RN 502698-04-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 3-hydroxytricyclo[3.3.1.1.3]dec-1-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

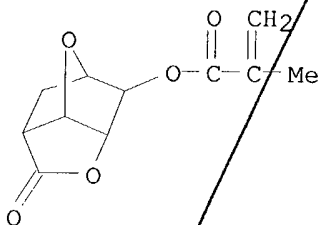
CRN 330595-98-7

CMF C13 H20 O2



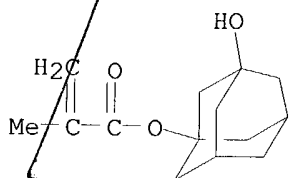
CM 2

CRN 274248-05-4
CMF C11 H12 O5



CM 3

CRN 115372-36-6
CMF C14 H20 O3

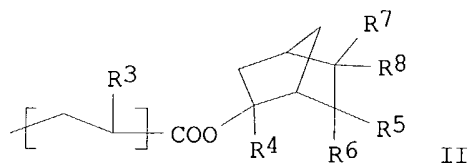
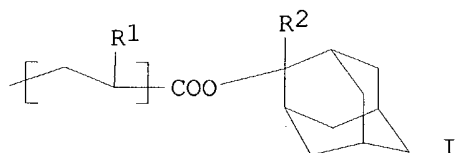


L96 ANSWER 11 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:217338 HCAPLUS
DN 138:262683
ED Entered STN: 20 Mar 2003
TI Polymer for electron beam- or far UV-sensitive resist composition and method for pattern formation using the same
IN Nishi, Tsunehiro; Kanei, Takeshi; Hasegawa, Koji; Watanabe, Satoshi; Nagura, Shigehiro
PA Shin-Etsu Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 32 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM G03F007-039

ICS C08F220-18; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 35

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2003084438 | A2 | 20030319 | JP 2001-277156 | 20010912 |
| | US 2003091929 | A1 | 20030515 | US 2002-241530 | 20020912 |
| | US 6703183 | B2 | 20040309 | | |
| PRAI | JP 2001-277156 | A | 20010912 | | |
| GI | | | | | |



AB The title polymer contains repeating unit I and II and has 1,000-500,000 weight average mol. weight The polymer provides resist of high resolution, high etching-resistance, wide temperature range for the heat-treatment.

ST polymer electron beam resist photoresist

IT Electron beam resists
 (polymer for electron beam or far UV-sensitive resist composition)

IT Photoresists
 (polymer for electron beam or far UV-sensitive resist composition and method for pattern formation using the same)

IT **500556-68-3P** 502442-11-7P 502442-13-9P 502442-15-1P
 502442-17-3P 502442-19-5P 502442-21-9P 502442-23-1P
 RL: **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
 (polymer for electron beam or far UV-sensitive **resist** composition)

IT **500556-68-3P**
 RL: **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
 (polymer for electron beam or far UV-sensitive **resist** composition)

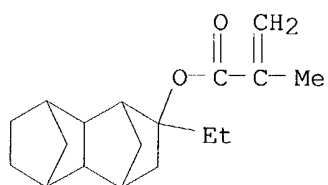
RN 500556-68-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 485819-03-2

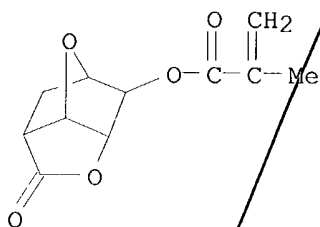
CMF C18 H26 O2



CM 2

CRN 274248-05-4

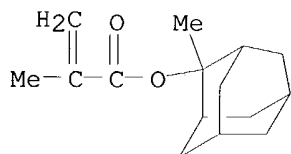
CMF C11 H12 O5



CM 3

CRN 177080-67-0

CMF C15 H22 O2



L96 ANSWER 12 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2003:167012 HCAPLUS
DN 138:212794
ED Entered STN: 05 Mar 2003
TI Macromolecules, their resist materials having high resolution, good etching resistance, high adhesion strength to substrates, and affinity to developers, and their patterning
IN Nishi, Tsunehiro; Hasegawa, Koji; Kaneo, Takeshi
PA Shin-Etsu Chemical Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 31 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F220-26

ICS C08F220-12; G03F007-039; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2003064134 | A2 | 20030305 | JP 2002-165085 | 20020606 |
| | US 2003054289 | A1 | 20030320 | US 2002-170346 | 20020614 |
| | US 6673518 | B2 | 20040106 | | |
| PRAI | JP 2001-181058 | A | 20010615 | | |
| GI | | | | | |

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The macromols. have weight-average mol. weight 1000-500,000 and contain repeating

units represented by general formula I (R1 = H, Me; R2 = H, C1-8 alkyl; R3 = H, CO2R4; R4 = C1-15 alkyl) and repeating units bearing carboxylic acids protected with acid-labile groups bearing adamantane structures or tetracyclo[4.4.0.12,5.17,10]dodecane structures, preferably represented by general formula II-IV (R5, R7, R10 = H, Me; R6, R8, R9, R11 = C1-15 alkyl). The resist materials containing the macromols. as base resins are applied to substrates, heated, exposed to high-energy radiation or electron beam via photomasks, post-exposure baked as required, and developed by using developers.

ST oxatricyclononanyl methacrylate adamantyl methacrylate copolymer photoresist; DUV resist oxatricyclononanyl methacrylate adamantyl methacrylate copolymer; electron beam resist methacrylate polymer

IT Electron beam resists
 Photoresists

((meth)acrylate copolymers for high-resolution, etching-resistant DUV and electron-beam resist materials)

IT 485819-02-1P 485819-04-3P 500556-62-7P
 500556-64-9P 500556-66-1P 500556-67-2P
 500556-68-3P 500556-69-4P 500556-70-7P

RL: IMF (Industrial manufacture); PREP (Preparation)

((meth)acrylate copolymers for high-resolution, etching-resistant DUV and electron-beam resist materials)

IT 485818-96-0P

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

((meth)acrylate copolymers for high-resolution, etching-resistant DUV and electron-beam resist materials)

IT 485819-02-1P 485819-04-3P 500556-62-7P
 500556-64-9P 500556-66-1P 500556-67-2P
 500556-68-3P 500556-69-4P 500556-70-7P

RL: IMF (Industrial manufacture); PREP (Preparation)

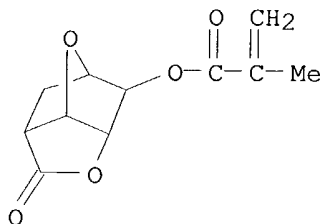
((meth)acrylate copolymers for high-resolution, etching-resistant DUV and electron-beam resist materials)

RN 485819-02-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

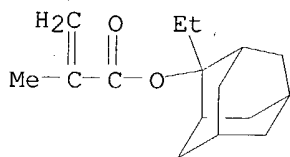
CM 1

CRN 274248-05-4
CMF C11 H12 O5



CM 2

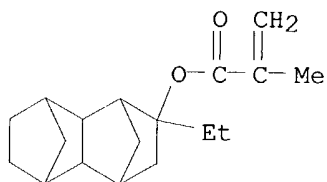
CRN 209982-56-9
CMF C16 H24 O2



RN 485819-04-3 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

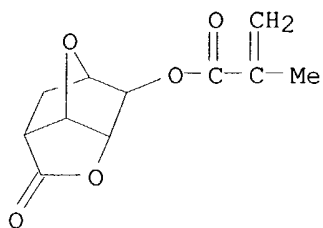
CM 1

CRN 485819-03-2
CMF C18 H26 O2



CM 2

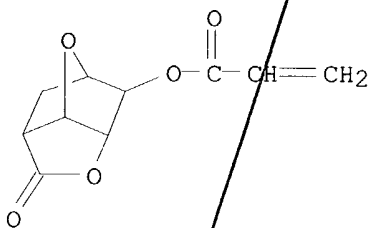
CRN 274248-05-4
CMF C11 H12 O5



RN 500556-62-7 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-methyltricyclo[3.3.1.13,7]dec-2-yl ester,
 polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-propenoate
 (9CI) (CA INDEX NAME)

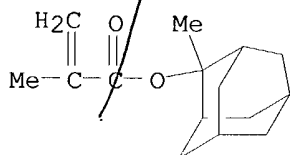
CM 1

CRN 500556-61-6
 CMF C10 H10 O5



CM 2

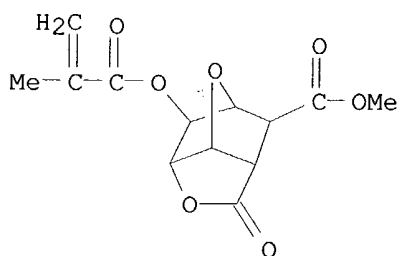
CRN 177080-67-0
 CMF C15 H22 O2



RN 500556-64-9 HCAPLUS
 CN 2,6-Methanofuro[3,2-b]furan-7-carboxylic acid, hexahydro-3-[(2-methyl-1-
 oxo-2-propenyl)oxy]-5-oxo-, methyl ester, polymer with
 2-methyltricyclo[3.3.1.13,7]dec-2-yl 2-methyl-2-propenoate (9CI) (CA
 INDEX NAME)

CM 1

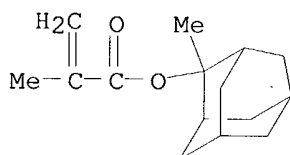
CRN 500556-63-8
 CMF C13 H14 O7



CM 2

CRN 177080-67-0

CMF C15 H22 O2



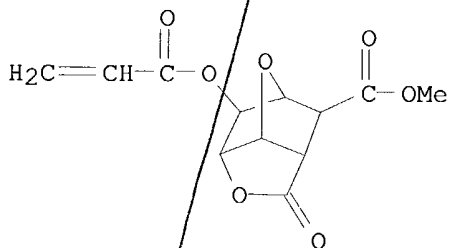
RN 500556-66-1 HCAPLUS

CN 2,6-Methanofurp[3,2-b]furan-7-carboxylic acid, hexahydro-5-oxo-3-[(1-oxo-2-propenyl)oxy]-, methyl ester, polymer with 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 500556-65-0

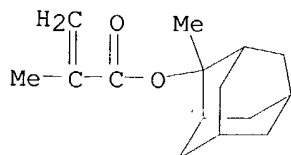
CMF C12 H12 O7



CM 2

CRN 177080-67-0

CMF C15 H22 O2

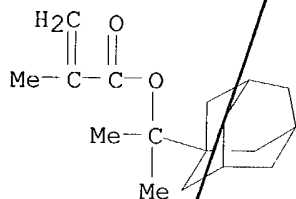


RN 500556-67-2 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 1-methyl-1-tricyclo[3.3.1.1.3,7]dec-1-ylethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 279218-76-7

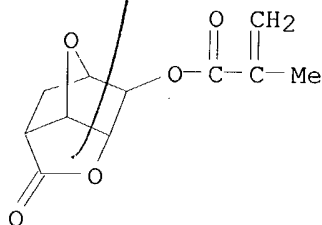
CMF C17 H26 O2



CM 2

CRN 274248-05-4

CMF C11 H12 O5

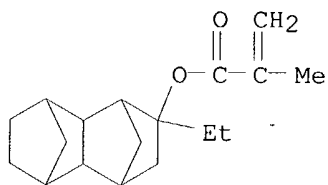


RN 500556-68-3 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 2-methyltricyclo[3.3.1.1.3,7]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 485819-03-2

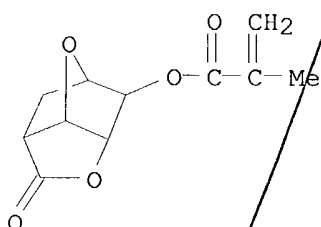
CMF C18 H26 O2



CM 2

CRN 274248-05-4

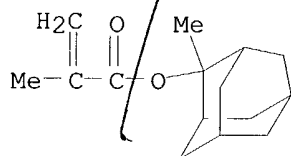
CMF C11 H12 O5



CM 3

CRN 177080-67-0

CMF C15 H22 O2



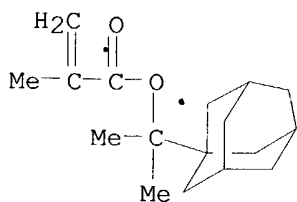
RN 500556-69-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.3^{1,3}⁷]dec-2-yl ester,
polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl
2-methyl-2-propenoate and 1-methyl-1-tricyclo[3.3.1.3^{1,3}⁷]dec-1-ylethyl
2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 279218-76-7

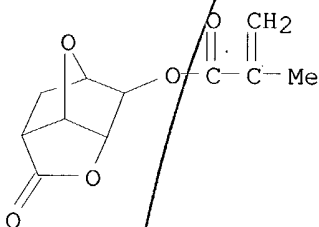
CMF C17 H26 O2



CM 2

CRN 274248-05-4

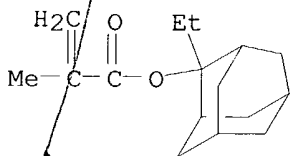
CMF C11 H12 O5



CM 3

CRN 209982-56-9

CMF C16 H24 O2



RN 500556-70-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with 2,5-furandione, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and spiro[bicyclo[2.2.1]hept-5-ene-2,3'(2'H)-furan]-5'(4'H)-one (9CI) (CA INDEX NAME)

CM 1

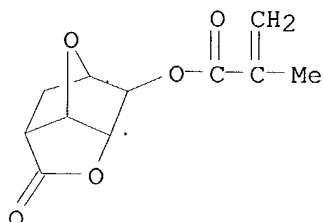
CRN 282542-79-4

CMF C10 H12 O2



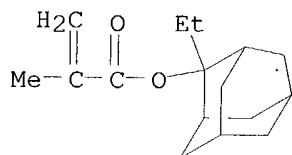
CM 2

CRN 274248-05-4
CMF C11 H12 O5



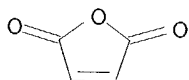
CM 3

CRN 209982-56-9
CMF C16 H24 O2



CM 4

CRN 108-31-6
CMF C4 H2 O3



IT 485818-96-0P

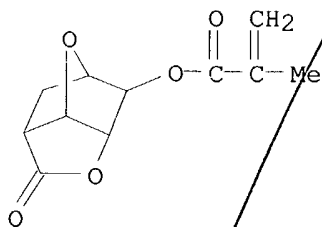
RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(meth)acrylate copolymers for high-resolution, etching-**resistant** DUV and electron-beam **resist** materials)

RN 485818-96-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

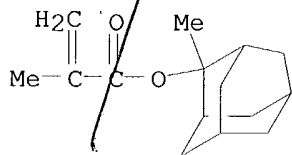
CRN 274248-05-4
CMF C11 H12 O5



CM 2

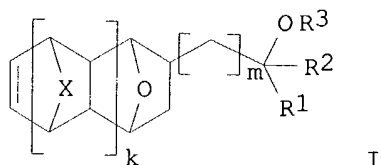
CRN 177080-67-0

CMF C15 H22 O2

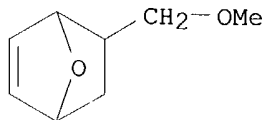


L96 ANSWER 13 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2003:56212 HCAPLUS
 DN 138:115060
 ED Entered STN: 24 Jan 2003
 TI Cycloalkenyl epoxy compounds, their polymers, positive photoresists containing them with high resolution and good adhesion to substrates, and photolithography using them
 IN Hasegawa, Koji; Kaneo, Takeshi; Watanabe, Takeshi
 PA Shin-Etsu Chemical Industry Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 37 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C08F034-00
 ICS C08G061-12; G03F007-039
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|-----------------|----------|
| PI | JP 2003020313 | A2 | 20030124 | JP 2001-207289 | 20010709 |
| | US 2003050398 | A1 | 20030313 | US 2002-189706 | 20020703 |
| PRAI | JP 2001-207289 | A | 20010709 | | |
| OS | MARPAT 138:115060 | | | | |
| GI | | | | | |

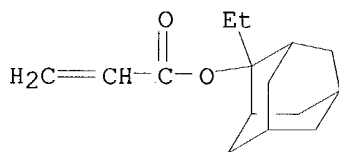


- AB The invention relates to epoxy compds. I (R1, R2 = H, C1-10-alkyl, etc.; R3 = C1-10-alkyl, C1-15-acyl, C1-15-alkoxycarbonyl, etc.; X = CH2, O, S; k = 0, 1; m = 0-5). The photoresists are sensitive to ArF excimer laser beams.
- ST cycloalkenyl epoxy UV excimer laser photoresist; photolithog pos resist oxabicycloheptene polymer ArF
- IT Positive photoresists
(UV; cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)
- IT Photolithography
(submicron UV; cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)
- IT 89898-05-5P, 7-Oxabicyclo[2.2.1]hept-5-ene-2-methanol 444105-76-4P
470722-58-8P, 7-Oxabicyclo[2.2.1]hept-2-ene, 5-(methoxymethyl)-
488720-32-7P 488720-33-8P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)
- IT 488720-35-0P 488720-36-1P 488720-37-2P 488720-38-3P
488720-39-4P 488720-40-7P 488720-41-8P
488720-43-0P
RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. **photoresists** with good adhesion to substrates)
- IT 3282-30-2, Pivaloyl chloride 21987-33-7 84752-05-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. photoresists with good adhesion to substrates)
- IT **488720-39-4P 488720-40-7P 488720-41-8P**
RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(cycloalkenyl epoxide polymers for ArF laser-sensitive high-resolution pos. **photoresists** with good adhesion to substrates)
- RN 488720-39-4 HCAPLUS
- CN 2-Propenoic acid, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with 2,5-furandione and 5-(methoxymethyl)-7-oxabicyclo[2.2.1]hept-2-ene (9CI)
(CA INDEX NAME)
- CM 1
- CRN 470722-58-8
CMF C8 H12 O2



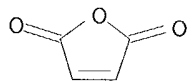
CM 2

CRN 303186-14-3
CMF C15 H22 O2



CM 3

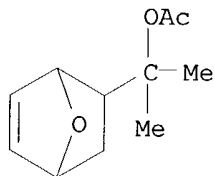
CRN 108-31-6
CMF C4 H2 O3



RN 488720-40-7 HCAPLUS
CN 2-Propenoic acid, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with
(α , α -dimethyl-7-oxabicyclo[2.2.1]hept-5-en-2-yl)methyl acetate
and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

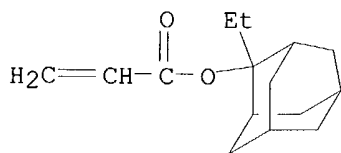
CRN 488720-33-8
CMF C11 H16 O3



CM 2

CRN 303186-14-3

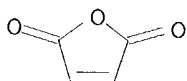
CMF C15 H22 O2



CM 3

CRN 108-31-6

CMF C4 H2 O3



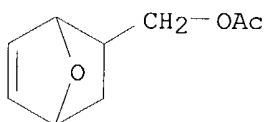
RN 488720-41-8 HCAPLUS

CN 2-Propenoic acid, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 7-oxabicyclo[2.2.1]hept-5-en-2-ylmethyl acetate (9CI) (CA INDEX NAME)

CM 1

CRN 444105-76-4

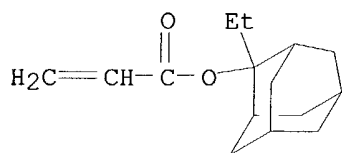
CMF C9 H12 O3



CM 2

CRN 303186-14-3

CMF C15 H22 O2



L96 ANSWER 14 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:42890 HCAPLUS

DN 138:115058

ED Entered STN: 17 Jan 2003
 TI Resist composition and patterning process
 IN Kobayashi, Tomohiro; Nishi, Tsunehiro; Watanabe, Satoshi; Kinsho, Takeshi;
 Nagura, Shigehiro; Ishihara, Toshinobu
 PA Shin-Etsu Chemical Co., Ltd., USA
 SO U.S. Pat. Appl. Publ., 35 pp.
 CODEN: USXXCO

DT Patent
 LA English

IC ICM G03F007-038

NCL 430270100; 430296000; 430330000; 430325000

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)

Section cross-reference(s): 35, 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | US 2003013039 | A1 | 20030116 | US 2002-170345 | 20020614 |
| | JP 2003066612 | A2 | 20030305 | JP 2002-168143 | 20020610 |
| PRAI | JP 2001-181079 | A | 20010615 | | |

AB The present invention relates to a resist composition comprising a hydrogenated product of ring-opening metathesis polymer and a poly(meth)acrylic acid derivative as a base resin. The present invention relates to a resist composition

is sensitive to high-energy radiation, has excellent sensitivity, resolution, and etch resistance, and lends itself to micropatterning with electron beams or deep-UV.

ST photoresist compn patterning photolithog

IT Photolithography
 Photoresists

(photoresist composition and patterning process)

IT 195000-69-2P 368872-75-7P 479075-48-4P 485391-25-1P 485818-87-9P
 485818-88-0P 485818-89-1P 485818-91-5P 485818-93-7P 485818-94-8P

485818-95-9P 485818-96-0P 485818-97-1P

485818-98-2P 485818-99-3P 485819-00-9P

485819-01-0P 485819-02-1P 485819-04-3P

485819-05-4P 485819-08-7P 485819-09-8P 485819-10-1P

RL: PRP (Properties); SPN (Synthetic preparation); TEM
 (Technical or engineered material use); PREP (Preparation); USES
 (Uses)

(photoresist composition and patterning process containing)

IT 485818-96-0P 485818-97-1P 485818-98-2P

485818-99-3P 485819-00-9P 485819-01-0P

485819-02-1P 485819-04-3P 485819-05-4P

485819-08-7P

RL: PRP (Properties); SPN (Synthetic preparation); TEM

(Technical or engineered material use); PREP (Preparation); USES
 (Uses)

(photoresist composition and patterning process containing)

RN 485818-96-0 HCAPLUS

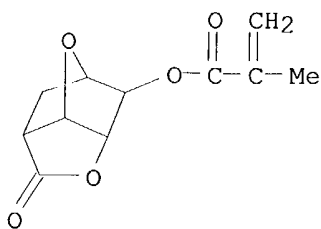
CN 2-Propenoic acid, 2-methyl-, hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl ester, polymer with 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl
 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 274248-05-4

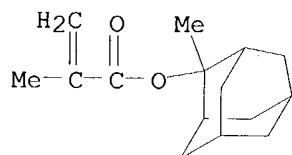
CMF C11 H12 O5

485818-96-0



CM 2

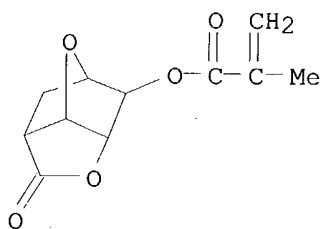
CRN 177080-67-0
CMF C15 H22 O2



RN 485818-97-1 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1.3,7]dec-2-yl ester,
polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl
2-methyl-2-propenoate and 2-methyltricyclo[3.3.1.1.3,7]dec-2-yl
2-methyl-2-propenoate (9CI) (CA INDEX NAME)

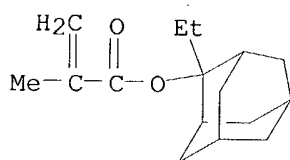
CM 1

CRN 274248-05-4
CMF C11 H12 O5



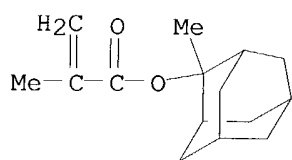
CM 2

CRN 209982-56-9
CMF C16 H24 O2



CM 3

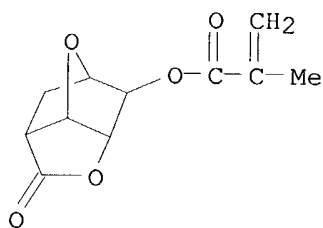
CRN 177080-67-0
CMF C15 H22 O2



RN 485818-98-2 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 1-ethylcyclopentyl ester, polymer with
hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate
(9CI) (CA INDEX NAME)

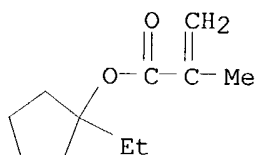
CM 1

CRN 274248-05-4
CMF C11 H12 O5



CM 2

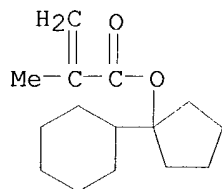
CRN 266308-58-1
CMF C11 H18 O2



RN 485818-99-3 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 1-cyclohexylcyclopentyl ester, polymer with
 hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate
 (9CI) (CA INDEX NAME)

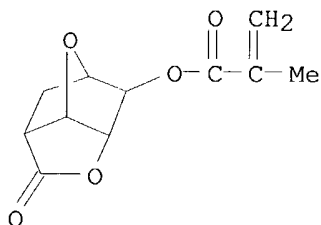
CM 1

CRN 366808-98-2
 CMF C15 H24 O2



CM 2

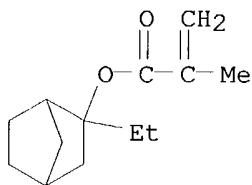
CRN 274248-05-4
 CMF C11 H12 O5



RN 485819-00-9 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer
 with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-
 propenoate (9CI) (CA INDEX NAME)

CM 1

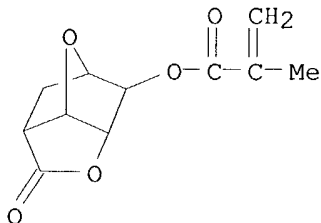
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CM 2

CRN 274248-05-4

CMF C11 H12 O5



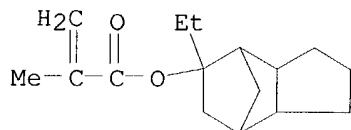
RN 485819-01-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 5-ethyloctahydro-4,7-methano-1H-inden-5-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 348089-09-8

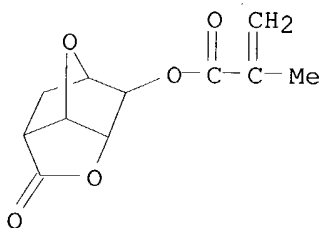
CMF C16 H24 O2



CM 2

CRN 274248-05-4

CMF C11 H12 O5



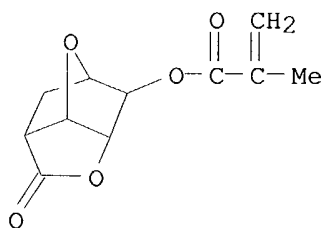
RN 485819-02-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 274248-05-4

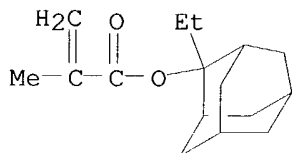
CMF C11 H12 O5



CM 2

CRN 209982-56-9

CMF C16 H24 O2



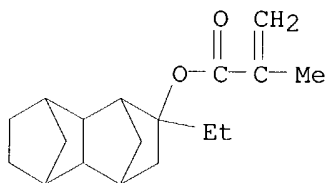
RN 485819-04-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 485819-03-2

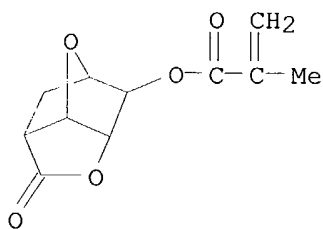
CMF C18 H26 O2



CM 2

CRN 274248-05-4

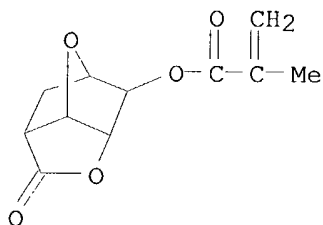
CMF C11 H12 O5



RN 485819-05-4 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester,
 polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl
 2-methyl-2-propenoate and 3-hydroxytricyclo[3.3.1.13,7]dec-1-yl
 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

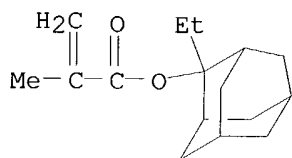
CM 1

CRN 274248-05-4
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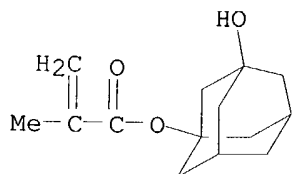
CM 2

CRN 209982-56-9
 CMF C16 H24 O2



CM 3

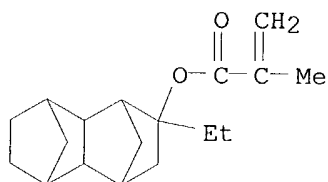
CRN 115372-36-6
 CMF C14 H20 O3



RN 485819-08-7 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-ethyldecahydro-1,4:5,8-dimethanonaphthalen-2-yl ester, polymer with hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate and 3-hydroxytricyclo[3.3.1.1.3,7]dec-1-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

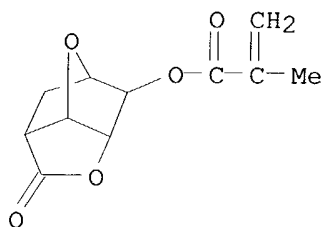
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CRN 485819-03-2
 CMF C18 H26 O2



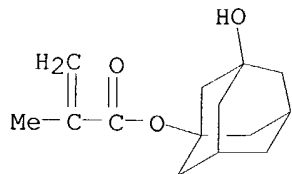
CM 2

CRN 274248-05-4
 CMF C11 H12 O5



CM 3

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 CMF C14 H20 O3

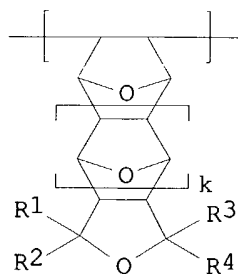


L96 ANSWER 15 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2002:978379 HCAPLUS
 DN 138:63824
 ED Entered STN: 29 Dec 2002
 TI Polymers, resist compositions and patterning process, novel tetrahydrofuran compounds and their preparation
 IN Nishi, Tsunehiro; Kinsho, Takeshi; Tachibana, Seiichiro; Watanabe, Takeru; Hasegawa, Koji; Kobayashi, Tomohiro
 PA Shin-Etsu Chemical Co., Ltd., Japan
 SO U.S. Pat. Appl. Publ., 40 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM G03F007-038
 ICS C08G065-34; G03F007-38; G03F007-40
 NCL 430270100; 528425000; 528271000; 525088000; 525165000; 430296000; 430330000; 430311000
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 35, 38

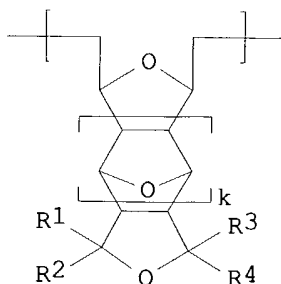
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | US 2002197559 | A1 | 20021226 | US 2002-126877 | 20020422 |
| | JP 2003034706 | A2 | 20030207 | JP 2002-113252 | 20020416 |
| PRAI | JP 2001-124126 | A | 20010423 | | |
| | JP 2001-124137 | A | 20010423 | | |

GI



I

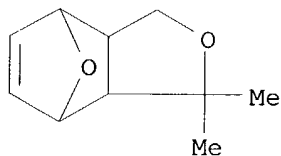


II

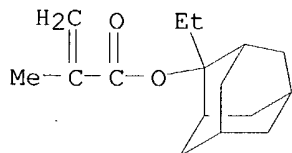
AB A polymer comprises recurring units of formula I or II (R1-4 = H, alkyl; or R1,2, and R3,4 taken together may form a ring with each pair being alkylene; k = 0, 1) and having a Mw of 1,000-500,000. A resist composition

comprising the polymer as a base resin is sensitive to high-energy radiation, has excellent sensitivity, resolution, etching resistance, and minimized swell and lends itself to micropatterning with electron beams or deep-UV.

ST photoresist compn patterning THF compd synthesis
 IT Photoresists
 (photoresist compns. and patterning process containing novel THF polymer)
 IT 479075-39-3P 479075-41-7P 479075-42-8P 479075-44-0P 479075-45-1P
 479075-46-2P **479075-47-3P** 479075-48-4P
 RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
 (Technical or engineered material use); **PREP (Preparation)**; USES
 (Uses)
 (photoresist compns. and patterning process containing novel THF polymer)
 IT 470722-61-3P 479075-38-2P 479075-40-6P
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of novel THF compound for photoresist compns. and patterning process)
 IT 98-59-9, p-Toluenesulfonyl chloride 72081-09-5 115888-24-9
 479075-51-9
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of novel THF compound for photoresist compns. and patterning process)
 IT 479075-49-5P 479075-50-8P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of novel THF compound for photoresist compns. and patterning process)
 IT **479075-47-3P**
 RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
 (Technical or engineered material use); **PREP (Preparation)**; USES
 (Uses)
 (photoresist compns. and patterning process containing novel THF polymer)
 RN 479075-47-3 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with 2,5-furandione and 1,3,3a,4,7,7a-hexahydro-1,1-dimethyl-4,7-epoxyisobenzofuran (9CI) (CA INDEX NAME)
 CM 1
 CRN 479075-38-2
 CMF C10 H14 O2



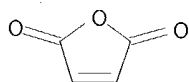
CM 2
 CRN 209982-56-9
 CMF C16 H24 O2



CM 3

CRN 108-31-6

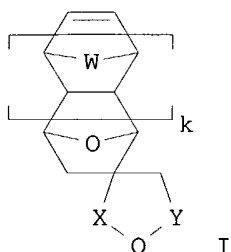
CMF C4 H2 O3



L96 ANSWER 16 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2002:975674 HCAPLUS
 DN 138:63818
 ED Entered STN: 27 Dec 2002
 TI Novel oxanorbornene spiro derivatives and their polymers for use as
 resists for photolithographic patterning
 IN Hasegawa, Koji; Kaneo, Takeshi; Watanabe, Takeshi; Nishi, Tsunehiro
 PA Shin-Etsu Chemical Industry Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 39 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C07D493-20
 ICS C07D493-22; C07D495-22; C08F034-02; C08F034-04; C08G061-12;
 G03F007-039; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 27, 38

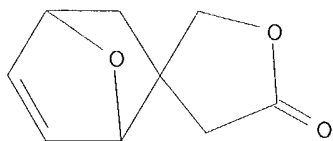
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|------------------|------|----------|-----------------|----------|
| PI | JP 2002371080 | A2 | 20021226 | JP 2001-179593 | 20010614 |
| | US 2003036603 | A1 | 20030220 | US 2002-167393 | 20020613 |
| PRAI | JP 2001-179593 | A | 20010614 | | |
| OS | MARPAT 138:63818 | | | | |
| GI | | | | | |



- AB Novel compound I (W = CH₂, O, S; X, Y = CR₁R₂, C(O); R₁-2 = H, C1-10 linear, branched, or cyclic alkyl with optional substitution of H with halogen; R₁ + R₂ may form aliphatic ring, k may be 0) is claimed. Polymers containing I as comonomers, resists mainly comprising the polymers, and photolithog. patterning of the resists are also claimed.
- ST patterning norbornene polymer chem amplified photoresist; norbornene spiro compd novel; photolithog patterning norbornene polymer chem amplified resist
- IT Photoresists
(chemical-amplified; oxanorbornene spiro derivative (polymers) for use in chemical amplified resists for photolithog. patterning)
- IT Polymers, preparation
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(oxanorbornene spiro compds.; oxanorbornene spiro derivative (polymers) for use in chemical amplified resists for photolithog. patterning)
- IT 478945-82-3P 478945-85-6P 478945-88-9P 478945-91-4P 478945-94-7P 478945-95-8P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(oxanorbornene spiro derivative (polymers) for use in chemical amplified resists for photolithog. patterning)
- IT 478945-83-4P 478945-86-7P 478945-89-0P 478945-92-5P 478945-96-9P **478945-98-1P** 478946-00-8P 478946-03-1P
RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(oxanorbornene spiro derivative (polymers) for use in chemical amplified **resists** for photolithog. patterning)
- IT 109-99-9, Tetrahydrofuran, reactions 110-00-9, Furan 2170-03-8, Itaconic acid anhydride
RL: RCT (Reactant); RACT (Reactant or reagent)
(oxanorbornene spiro derivative (polymers) for use in chemical amplified resists for photolithog. patterning)
- IT **478945-98-1P**
RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(oxanorbornene spiro derivative (polymers) for use in chemical amplified **resists** for photolithog. patterning)
- RN 478945-98-1 HCAPLUS
- CN 2-Propenoic acid, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with 2,5-furandione and spiro[furan-3(2H),2'-[7]oxabicyclo[2.2.1]hept[5]en]-5(4H)-one (9CI) (CA INDEX NAME)
- CM 1
- CRN 478945-85-6

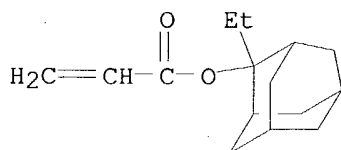
CMF C9 H10 O3



CM 2

CRN 303186-14-3

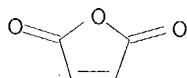
CMF C15 H22 O2



CM 3

CRN 108-31-6

CMF C4 H2 O3

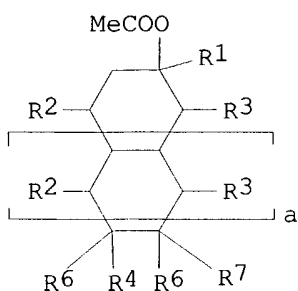


L96 ANSWER 17 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:866834 HCAPLUS
DN 137:377436
ED Entered STN: 15 Nov 2002
TI Polymers for chemically amplified positive-working resists and their use
in pattern formation
IN Harada, Yuji; Watanabe, Atsushi; Hatakeyama, Jun; Kawai, Yoshio; Sasako,
Masaru; Endo, Masataka; Kishimura, Shinji; Otani, Michitaka; Miyazawa,
Satoru; Tsutsumi, Kentaro; Maeda, Kazuhiko
PA Shin-Etsu Chemical Industry Co., Ltd., Japan; Matsushita Electric
Industrial Co., Ltd.; Central Glass Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C08F020-22
ICS C08F022-40; C08F032-00; C08F034-00; C08G061-12; G03F007-039;
H01L021-027
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|----------|
| PI | JP 2002327013 | A2 | 20021115 | JP 2002-50829 | 20020227 |
| | US 2003008231 | A1 | 20030109 | US 2002-84828 | 20020228 |
| PRAI | JP 2001-53664 | A | 20010228 | | |
| | JP 2001-53669 | A | 20010228 | | |

GI



AB The polymers have weight-average mol. weight 1000-500,000 and groups I [R1-R3, R6,

R7 = H, F, C1-20 linear, branched, or cyclic (fluorinated) alkyl; R2 and R3 may be C1-20 alkylene optionally containing hetero atoms to form ring; R4, R5 = H, F; , R6 and/or R7 contains ≥ 1 F; R6 and R7 may be C1-20 linear, branched, or cyclic (fluorinated) alkylene to form ring; a = 0, 1]. Patterns are formed by coating substrates with resists containing the polymers, heating, exposing with photomasks and high-energy rays at 100-180 nm- or 1-30 nm-wavelength regions, heating optionally, and developing with solns. The resists have high sensitivity high-energy rays, transparency, and plasma etching resistance and are suitable for fine pattern formation in ultra LSI manufacture

ST chem amplified pos working resist fluorine polymer

IT Positive photoresists

X-ray lithography

(F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT Photolithography

(UV; F-containing group-containing polymers for chemical amplified

pos.-working

resists and their use in pattern formation)

IT Fluoropolymers, preparation

RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(acrylic; F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT Resists

(pos.-working; F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT 925-90-6P, Ethylmagnesium bromide 99817-47-7P 133205-28-4P

399518-70-8P 399518-71-9P 399518-72-0P 475471-98-8P 475562-52-8P

475562-66-4P 475562-68-6P 475562-75-5P 475562-76-6P 475562-77-7P

RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)

(F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT 475471-96-6P 475471-97-7P 475562-71-1P **475562-73-3P**
 475562-74-4P
 RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
 (F-containing group-containing polymers for chemical amplified pos.-working **resists** and their use in pattern formation)

IT 79-41-4, Methacrylic acid, reactions 110-00-9, Furan 542-92-7, Cyclopentadiene, reactions 559-40-0, Octafluorocyclopentene 814-68-6, Acrylic acid chloride 920-46-7, Methacrylic acid chloride 25291-17-2, Perfluorohexylethylene
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT 102-71-6, Triethanolamine, uses 102-82-9, Tributylamine
 RL: TEM (Technical or engineered material use); USES (Uses)
 (F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT 66003-76-7 66003-78-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (acid generator; F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT 475562-72-2P
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (assocaaF-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

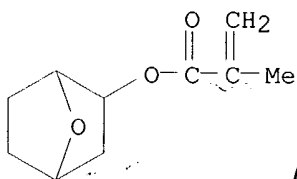
IT 139254-88-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (dissoln. inhibitor; F-containing group-containing polymers for chemical amplified pos.-working resists and their use in pattern formation)

IT **475562-73-3P**
 RL: **IMF (Industrial manufacture)**; TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
 (F-containing group-containing polymers for chemical amplified pos.-working **resists** and their use in pattern formation)

RN 475562-73-3 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester, polymer with tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate and 5(or 6)-(tridecafluorohexyl)-7-oxabicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

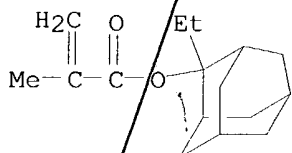
CRN 475562-68-6
 CMF C16 H13 F13 O3
 CCI IDS

D1- (CF₂)₅-CF₃

CM 2

CRN 209982-56-9

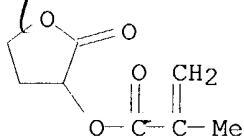
CMF C16 H24 O2



CM 3

CRN 195000-66-9

CMF C8 H10 O4



L96 ANSWER 18 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:794185 HCAPLUS
DN 137:317926
ED Entered STN: 18 Oct 2002
TI Polymer, resist composition and patterning process
IN Nishi, Tsunehiro; Nakashima, Mutsuo; Tachibana, Seiichiro; Funatsu, Kenji
PA Shin-Etsu Chemical Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 38 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G03F007-038
ICS G03F007-20; G03F007-38; G03F007-40; G03F007-30
NCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)

applicant

Section cross-reference(s): 35, 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|---------------|------|----------|-----------------|----------|
| PI | US 2002150835 | A1 | 20021017 | US 2002-73223 | 20020213 |
| | JP 2002317016 | A2 | 20021031 | JP 2002-21562 | 20020130 |
| PRAI | JP 2001-37247 | A | 20010214 | | |
| | JP 2001-37262 | A | 20010214 | | |
| | JP 2001-37271 | A | 20010214 | | |

AB A novel polymer is obtained by copolymerizing a (meth)acrylic acid derivative with a vinyl ether compound, an allyl ether compound and an oxygen-containing alicyclic olefin compound. A photoresist composition comprising the polymer as a base resin is sensitive to high-energy radiation, has excellent sensitivity, resolution, etching resistance, and minimized swell and lends itself to micropatterning with electron beams or deep-UV.

ST photoresist polymer composition photolithography

IT Photoresists
(polymer for photoresist composition and patterning process)

IT Photolithography
(vacuum UV; polymer for photoresist composition and patterning process)

IT 470722-46-4P 470722-47-5P 470722-48-6P 470722-49-7P 470722-50-0P
470722-51-1P 470722-52-2P 470722-53-3P 470722-54-4P 470722-55-5P
470722-56-6P 470722-57-7P 470722-59-9P 470722-60-2P
470722-62-4P 470722-64-6P 470722-65-7P
470722-66-8P 470722-67-9P 470722-68-0P
470722-69-1P 470722-70-4P 470722-71-5P 470722-72-6P 470722-73-7P
470722-74-8P 470722-75-9P 470722-76-0P

RL: PRP (Properties); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polymer for photoresist composition and patterning process)

IT 470722-59-9P 470722-60-2P 470722-62-4P
470722-64-6P 470722-65-7P 470722-66-8P
470722-67-9P 470722-68-0P

RL: PRP (Properties); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES
(Uses)
(polymer for photoresist composition and patterning process)

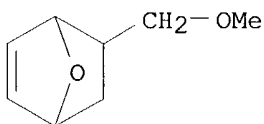
RN 470722-59-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1^{3,7}]dec-2-yl ester,
polymer with 5-(methoxymethyl)-7-oxabicyclo[2.2.1]hept-2-ene (9CI) (CA
INDEX NAME)

CM 1

CRN 470722-58-8

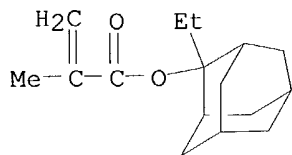
CMF C8 H12 O2



CM 2

CRN 209982-56-9

CMF C16 H24 O2



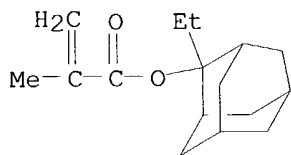
RN 470722-60-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 7-oxabicyclo[2.2.1]hept-5-ene-2-methanol (9CI) (CA INDEX NAME)

CM 1

CRN 209982-56-9

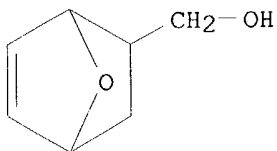
CMF C16 H24 O2



CM 2

CRN 89898-05-5

CMF C7 H10 O2



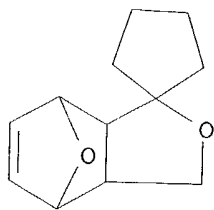
RN 470722-62-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 3'a,4',7',7'a-tetrahydrospiro[cyclopentane-1,1'(3'H)-[4,7]epoxyisobenzofuran] (9CI) (CA INDEX NAME)

CM 1

CRN 470722-61-3

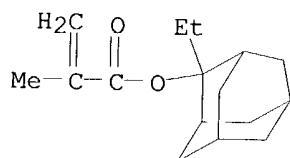
CMF C12 H16 O2



CM 2

CRN 209982-56-9

CMF C16 H24 O2



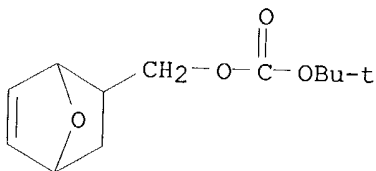
RN 470722-64-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.13,7]dec-2-yl ester, polymer with 1,1-dimethylethyl 7-oxabicyclo[2.2.1]hept-5-en-2-ylmethyl carbonate (9CI) (CA INDEX NAME)

CM 1

CRN 470722-63-5

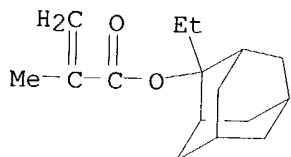
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CM 2

CRN 209982-56-9

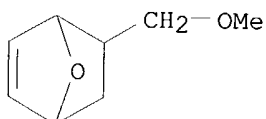
CMF C16 H24 O2



RN 470722-65-7 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with 5-(methoxymethyl)-7-oxabicyclo[2.2.1]hept-2-ene (9CI) (CA INDEX NAME)

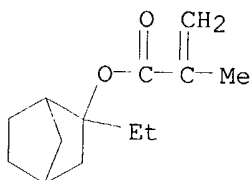
CM 1

CRN 470722-58-8
 CMF C8 H12 O2



CM 2

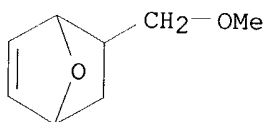
CRN 330595-98-7
 CMF C13 H20 O2



RN 470722-66-8 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 1-cyclohexylcyclopentyl ester, polymer with 5-(methoxymethyl)-7-oxabicyclo[2.2.1]hept-2-ene (9CI) (CA INDEX NAME)

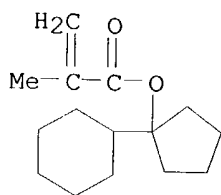
CM 1

CRN 470722-58-8
 CMF C8 H12 O2



CM 2

CRN 366808-98-2
 CMF C15 H24 O2



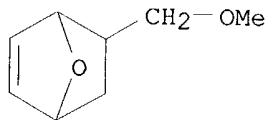
RN 470722-67-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, polymer with 2-ethyltricyclo[3.3.1.1.3,7]dec-2-yl 2-methyl-2-propenoate and 5-(methoxymethyl)-7-oxabicyclo[2.2.1]hept-2-ene (9CI) (CA INDEX NAME)

CM 1

CRN 470722-58-8

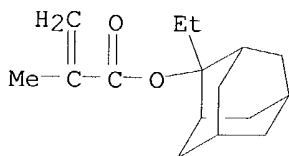
CMF C8 H12 O2



CM 2

CRN 209982-56-9

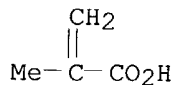
CMF C16 H24 O2



CM 3

CRN 79-41-4

CMF C4 H6 O2

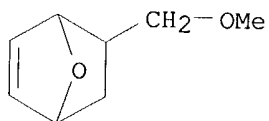


RN 470722-68-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethyltricyclo[3.3.1.1.3,7]dec-2-yl ester, polymer with 5-(methoxymethyl)-7-oxabicyclo[2.2.1]hept-2-ene and tetrahydro-2-oxo-3-furanyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

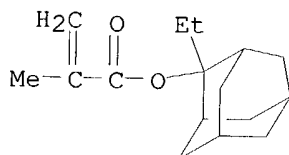
CM 1

CRN 470722-58-8
CMF C8 H12 O2



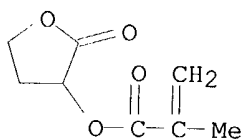
CM 2

CRN 209982-56-9
CMF C16 H24 O2



CM 3

CRN 195000-66-9
CMF C8 H10 O4



L96 ANSWER 19 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:716915 HCAPLUS
DN 137:270511
ED Entered STN: 20 Sep 2002
TI Polymers, resist materials, and pattern formation method
IN Nishi, Tsunehiro; Hasegawa, Koji; Nakashima, Mutsuo
PA Shin-Etsu Chemical Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 37 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G03F007-039
ICS G03F007-38; G03F007-40
NCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)

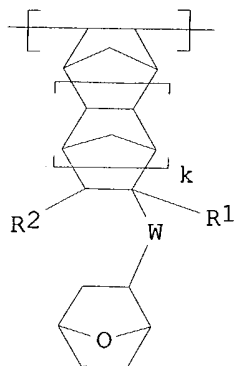
KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

Section cross-reference(s): 35, 38

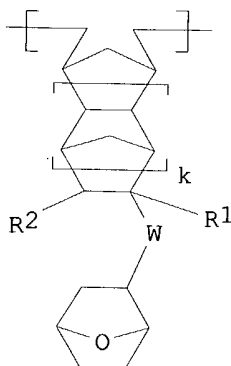
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------------|------|----------|-----------------|----------|
| PI | US 2002132182 | A1 | 20020919 | US 2002-50478 | 20020116 |
| | US 6677101 | B2 | 20040113 | | |
| | JP 2002303985 | A2 | 20021018 | JP 2002-8244 | 20020117 |
| PRAI | JP 2001-8613 | A | 20010117 | | |

GI



I



II

AB The present invention provides (1) a polymer which has excellent reactivity, rigidity and adhesion to the substrate, and undergoes a low degree of swelling during development, (2) a resist material which uses this polymer as the base resin and hence exhibits much higher resolving power and etching resistance than conventional resist materials, and (3) a pattern formation method using this resist material. Specifically, the present invention provides a novel polymer containing repeating units represented by I, II (R1 = H, Me, CH₂CO₂R₃; R₂ = H, Me, CO₂R₃; R₃ = C1-15 alkyl; W = C2-20 divalent hydrocarbon radical, which may have ≥ 1 ester linkage in its structure and may further be substituted by one or more other atomic group containing a heteroatom; k = 0,1) and having a weight-average

mol. weight of 1,000-500,000, a resist material using the polymer as a base resin, and a pattern formation method using the resist material.

ST photoresist compn photolithog polymer

IT Photolithography

Photoresists

(polymers, photoresist materials, and pattern formation method)

IT 461671-53-4P 461671-55-6P 461671-57-8P 461671-59-0P 461671-60-3P

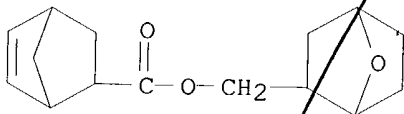
461671-61-4P 461671-62-5P 461671-63-6P 461671-64-7P

461671-65-8P 461671-66-9P 461671-68-1PRL: PRP (Properties); **SPN (Synthetic preparation)**; TEM(Technical or engineered material use); **PREP (Preparation)**; USES(Uses)
(polymers, **photoresist** materials, and pattern formation method)IT **461671-65-8P**RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM(Technical or engineered material use); **PREP (Preparation)**; USES(Uses)
(polymers, **photoresist** materials, and pattern formation method)

RN 461671-65-8 HCAPLUS
CN Bicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 7-oxabicyclo[2.2.1]hept-2-ylmethyl ester, polymer with 2-ethylbicyclo[2.2.1]hept-2-yl 2-methyl-2-propenoate and 2,5-furandione (9CI) (CA INDEX NAME)

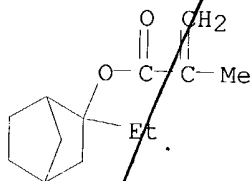
CM 1

CRN 461671-52-3
CMF C15 H20 O3



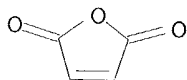
CM 2

CRN 330595-98-7
CMF C13 H20 O2



CM 3

CRN 108-31-6
CMF C4 H2 O3

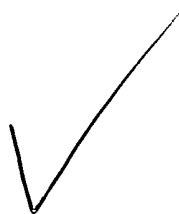
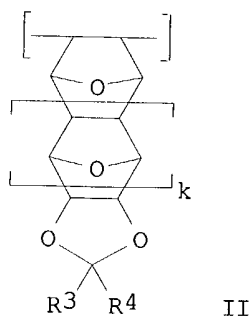
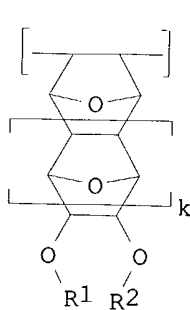


L96 ANSWER 20 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:638326 HCAPLUS
DN 137:192764
ED Entered STN: 23 Aug 2002
TI Polymer, resist composition and patterning process
IN Nishi, Tsunehiro; Kinsho, Takeshi
PA Shin-Etsu Chemical Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 34 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM C08G065-34
NCL 528425000

CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 35, 38

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | US 2002115821 | A1 | 20020822 | US 2001-3117 | 20011206 |
| | US 6673517 | B2 | 20040106 | | |
| | JP 2002234915 | A2 | 20020823 | JP 2001-369711 | 20011204 |
| PRAI | JP 2000-372406 | A | 20001207 | | |
| GI | | | | | |



AB The present invention relates to a polymer comprising recurring units of I and/or II (R1,2 = H, C1-15 alkyl, acyl, alkylsulfonyl, C2-15 alkoxy carbonyl, alkoxyalkyl which may have halogen substituents; R3,4 = H, C1-15 alkyl, alkoxy, C2-15, alkoxyalkyl which may have halogen substituents, and R3,4 may together bond with the carbon atom to form an aliphatic ring, or R3,4 taken together, may be an oxygen atom; k=0 or 1), and having a Mw of 1,000-500,000. A resist composition comprising the polymer as a base resin is sensitive to high-energy radiation, has excellent sensitivity, resolution, etching resistance, and minimized swell and lends itself to micropatterning with electron beams or deep-UV.

ST photoresist photolithog resin

IT Photolithography
(UV; polymer, resist composition for micropatterning process)

IT Photoresists
(polymer, resist composition for micropatterning process)

IT 449172-89-8P 449172-90-1P 449172-92-3P 449172-94-5P 449172-95-6P
449172-96-7P 449172-98-9P 449172-99-0P 449173-01-7P 449173-02-8P
449173-04-0P 449173-05-1P

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)

(polymer, **resist** composition for micropatterning process)

IT **449173-04-0P**
RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)

(polymer, **resist** composition for micropatterning process)

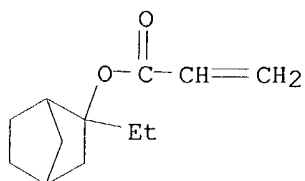
RN 449173-04-0 HCAPLUS

CN 2-Propenoic acid, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with
2,5-furandione and 3a,4,7,7a-tetrahydro-2,2-dimethyl-4,7-epoxy-1,3-
benzodioxole (9CI) (CA INDEX NAME)

CM 1

CRN 449173-03-9

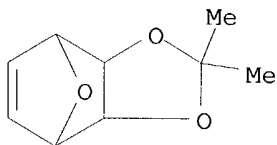
CMF C12 H18 O2



CM 2

CRN 449172-91-2

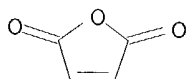
CMF C9 H12 O3



CM 3

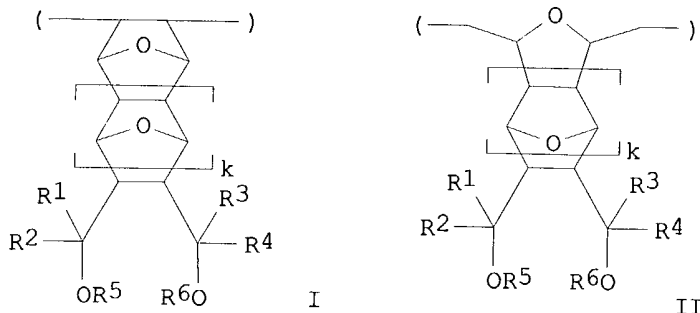
CRN 108-31-6

CMF C4 H2 O3



L96 ANSWER 21 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2002:638323 HCAPLUS
DN 137:192763
ED Entered STN: 23 Aug 2002
TI Polymer, resist composition and patterning process
IN Nishi, Tsunehiro; Nakashima, Mutsuo; Kobayashi, Tomohiro
PA Shin-Etsu Chemical Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 35 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM C08F124-00
NCL 526266000
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 35, 38
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-----------------------|------|----------|-----------------|----------|
| PI | US 2002115807 | A1 | 20020822 | US 2001-998200 | 20011203 |
| | US 6512067 | B2 | 20030128 | | |
| | JP 2002234914 | A2 | 20020823 | JP 2001-363804 | 20011129 |
| | US 2003120009 | A1 | 20030626 | US 2002-307996 | 20021203 |
| | US 6605678 | B2 | 20030812 | | |
| PRAI | JP 2000-368628 | A | 20001204 | | |
| GI | US 2001-998200 | A3 | 20011203 | | |



AB The present invention relates to a polymer comprising recurring units of formula I or II (R1-4 = H, C1-15 alkyl, R1,2, and R3,4, taken together, may form a ring; R5,6 = H, C1-15 alkyl, acyl, alkylsulfonyl groups, C2-15 alkoxy carbonyl or alkoxyalkyl groups which may have halogen substituents; and k=0 or 1); and having a Mw of 1,000-500,000. A resist composition comprising the polymer as a base resin is sensitive to high-energy radiation, has excellent sensitivity, resolution, etching resistance, and minimized swell and lends itself to micropatterning with electron beams or deep-UV.

ST photoresist photolithog electron beam UV

IT Photolithography

(UV; polymer, resist composition for micropatterning process)

IT Photoresists

(polymer, resist composition for micropatterning process)

IT 449165-65-5P 449165-69-9P 449165-73-5P 449165-76-8P 449165-78-0P

449165-80-4P **449165-82-6P** 449165-84-8P

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM

(Technical or engineered material use); **PREP (Preparation)**; USES

(Uses)

(polymer, **resist** composition for micropatterning process)

IT **449165-82-6P**

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM

(Technical or engineered material use); **PREP (Preparation)**; USES

(Uses)

(polymer, **resist** composition for micropatterning process)

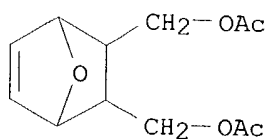
RN 449165-82-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer with 2,5-furandione and 7-oxabicyclo[2.2.1]hept-5-ene-2,3-diylbis(methylene) diacetate (9CI) (CA INDEX NAME)

CM 1

CRN 449165-64-4

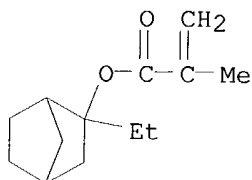
CMF C12 H16 O5



CM 2

CRN 330595-98-7

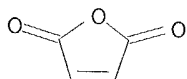
CMF C13 H20 O2



CM 3

CRN 108-31-6

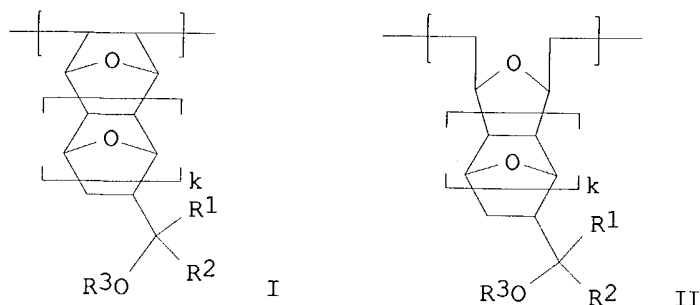
CMF C4 H2 O3



L96 ANSWER 22 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2002:575607 HCAPLUS
 DN 137:132115
 ED Entered STN: 02 Aug 2002
 TI Polymer, resist composition and patterning process
 IN Nishi, Tsunehiro; Nakashima, Mutsuo; Kobayashi, Tomohiro
 PA Shin-Etsu Chemical Co., Ltd., Japan
 SO U.S. Pat. Appl. Publ., 35 pp.
 CODEN: USXXCO
 DT Patent
 LA English
 IC ICM G03F007-038
 ICS G03F007-38; G03F007-40; G03F007-30
 NCL 430270100
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 35, 38
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------------|------|-------|-----------------|-------|
| ----- | ---- | ----- | ----- | ----- |

| | | | | | |
|------|-----------------------|----|----------|------------------|----------|
| PI | US 2002102493 | A1 | 20020801 | US 2001-221 | 20011204 |
| | US 6670094 | B2 | 20031230 | | |
| | JP 2002234913 | A2 | 20020823 | JP 2001-363803 | 20011129 |
| | TW 527523 | B | 20030411 | TW 2001-90129860 | 20011203 |
| PRAI | JP 2000-368672 | A | 20001204 | | |
| GI | | | | | |



AB The present invention relates to a polymer comprising recurring units of I, II (R1,2 = H, C1-15 alkyl, R1,2 taken together, may form a ring; R3 = H, C1-15 alkyl, acyl or alkylsulfonyl or C2-15 alkoxy carbonyl or alkoxyalkyl which may have halogen substituents; not all R1-3 are hydrogen; k = 0 or 1) and having a Mw of 1,000-500,000.. The present invention relates to a photoresist composition comprising the polymer as a base resin which is sensitive to high-energy radiation, has excellent sensitivity, resolution, etching resistance, and minimized swell and lends itself to micropatterning with electron beams or deep-UV.

ST photoresists resin photolithog

IT Photolithography

(UV; polymer photoresist composition for patterning process)

IT Photoresists

(polymer photoresist composition for patterning process)

IT 444045-74-3P 444045-76-5P 444045-78-7P 444105-77-5P 444105-79-7P
444105-81-1P **444105-83-3P** 444105-85-5P

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)

(polymer **photoresist** composition for patterning process)

IT **444105-83-3P**

RL: PRP (Properties); **SPN (Synthetic preparation)**; TEM
(Technical or engineered material use); **PREP (Preparation)**; USES
(Uses)

(polymer **photoresist** composition for patterning process)

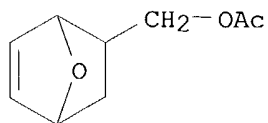
RN 444105-83-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 2-ethylbicyclo[2.2.1]hept-2-yl ester, polymer
with 2,5-furandione and 7-oxabicyclo[2.2.1]hept-5-ene-2-methyl acetate
(9CI) (CA INDEX NAME)

CM 1

CRN 444105-76-4

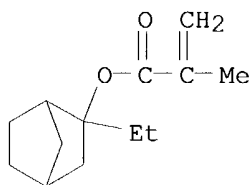
CMF C9 H12 O3



CM 2

CRN 330595-98-7

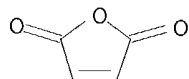
CMF C13 H20 O2



CM 3

CRN 108-31-6

CMF C4 H2 O3



L96 ANSWER 23 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2001:726601 HCAPLUS
 DN 135:280511
 ED Entered STN: 05 Oct 2001
 TI Positive-working photoresist compositions showing high resolution and high sensitivity and excellent storage stability
 IN Sato, Kenichiro
 PA Fuji Photo Film Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 62 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM G03F007-039
 ICS C08K005-00; C08L101-08; G03F007-004; G03F007-075; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 38
 FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|-----------------|----------|
| PI | JP 2001272784 | A2 | 20011005 | JP 2000-385724 | 20001219 |
| PRAI | JP 1999-363302 | A | 19991221 | | |

JP 2000-10773 A 20000119
 JP 2000-10774 A 20000119
 OS MARPAT 135:280511
 AB The compns. contain (A) compds. generating acid on irradiation of actinic ray or radiation, (B) polymers containing structural repeating unit CO₂CR₁R₂(CR₃R₄)mSiR₅R₆R₇ (R₁-2 = (cyclic) alkyl; R₃-4 = H, (cyclic) alkyl; R₁ + R₂, R₃ + R₄ may form cyclic alkyl; R₅-7 = (cyclic) alkyl, aryl, trialkylsilyl(oxy); m = integer of 1-6) and increasing solubility in alkaline developing agents by reaction with acids, (C) organic basic compds., and (D) ≥1 of F-containing surfactants, Si-containing surfactants, and nonionic surfactants. Preferable structural repeating units also contained in the polymers are given in Markush. Also claimed are (1) compns. consisting of (A') acid-generating sulfonium salts R₁S⁺ R₂R₃ Z⁻ (R₁-3 = (un)substituted alkyl or aryl; R₁ + R₂ may bond via single bond or bonding group; Z⁻ = anion) and polymers B and (2) compns. consisting of acid generators A, polymers B, and certain surfactants given in the document. The compns. are useful in manufacture of semiconductor devices, printed circuits, liquid crystal panels, etc.

ST pos photoresist alk soluble silyl contg polymer; acid generator pos photoresist storage stable; sulfonium salt acid generator pos photoresist

IT Polysiloxanes, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (KP 341, surfactant; alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT Positive photoresists
 (alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT Sulfonium compounds
 RL: TEM (Technical or engineered material use); USES (Uses)
 (alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT Surfactants
 (fluorosurfactants; alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT Surfactants
 (nonionic, surfactant; alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT Fluoropolymers, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (surfactant; alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT 14159-45-6P 39153-56-5P 66003-76-7P 66003-78-9P 67695-82-3P
 138529-81-4P 144089-15-6P 153698-46-5P 177786-98-0P 206861-54-3P
 241806-75-7P 258341-95-6P 258341-99-0P 279218-73-4P 279218-74-5P
 279218-75-6P 301525-08-6P 312386-77-9P 324771-13-3P 350251-56-8P
 350251-57-9P 363616-18-6P
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (acid generator; alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT 263713-67-3P 363616-30-2P 363616-32-4P 363616-34-6P 363616-36-8P
 363616-38-0P 363616-40-4P 363616-42-6P 363616-45-9P 363616-47-1P
 363616-49-3P 363616-51-7P 363616-53-9P 363616-56-2P 363616-59-5P
 363616-62-0P 363616-65-3P 363616-68-6P 363616-71-1P 363616-74-4P
 363616-76-6P 363616-77-7P 363616-78-8P 363616-81-3P 363616-82-4P
363616-83-5P 363616-85-7P 363616-86-8P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(alkaline-developing silyl-containing polymer pos. **photoresists** having storage stability)

IT 484-47-9, 2,4,5-Triphenyl imidazole 1122-58-3, 4-Dimethylamino pyridine
6674-22-2, 1,8-Diazabicyclo[5.4.0]-7-undecene

RL: TEM (Technical or engineered material use); USES (Uses)

(alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 97-64-3,
Ethyl lactate 108-32-7, Propylene carbonate 110-43-0, 2-Heptanone
123-86-4, Butyl acetate 1320-67-8, Propylene glycol monomethyl ether
14272-48-1, 2-Ethoxyethyl propionate 84540-57-8, Propylene glycol
monomethyl ether acetate 98516-33-7, Propylene glycol monomethyl ether
propionate

RL: TEM (Technical or engineered material use); USES (Uses)

having (solvent; alkaline-developing silyl-containing polymer pos. photoresists storage stability)

IT 9016-45-9, Polyoxyethylene nonylphenyl ether 137462-24-9, Megafac F176
216679-67-3, Megafac R08 364039-09-8, Troysol S 336

RL: TEM (Technical or engineered material use); USES (Uses)

(surfactant; alkaline-developing silyl-containing polymer pos. photoresists having storage stability)

IT 363616-83-5P

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)

(alkaline-developing silyl-containing polymer pos. **photoresists**
having storage stability)

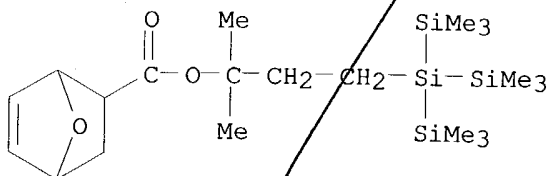
RN 363616-83-5 HCAPLUS

CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 1,1-dimethyl-3-[2,2,2-trimethyl-1,1-bis(trimethylsilyl)disilanyl]propyl ester, polymer with ethoxymethyl 2-methyl-2-propenoate and 2,5-furandione (9CI) (CA INDEX NAME)

CM 1

CRN 363616-67-5

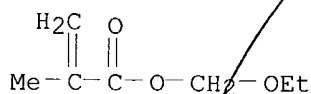
CMF C21 H44 O3 Si4



CM 2

CRN 76392-16-0

CMF C7/H12 03



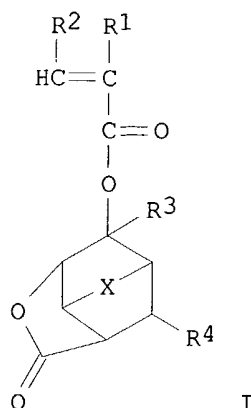
CM 3
CRN 108-31-6
CMF C4 H2 O3



L96 ANSWER 24 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:627184 HCAPLUS
DN 135:218719
ED Entered STN: 29 Aug 2001
TI Lactone-containing compounds, polymers, resist compositions, and
patterning method
IN Hasegawa, Koji; Nishi, Tsunehiro; Kinsho, Takeshi; Hatakeyama, Jun;
Watanabe, Osamu
PA Shin-Etsu Chemical Co., Ltd., Japan
SO U.S., 35 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM G03F007-004
ICS G08F010-00; C07D307-00
NCL 430270100
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
Reprographic Processes)
Section cross-reference(s): 35, 36, 76

FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|-------------------|------|----------|------------------|----------|
| PI | US 6280898 | B1 | 20010828 | US 1999-404763 | 19990924 |
| | KR 2000023368 | A | 20000425 | KR 1999-40854 | 19990922 |
| | TW 442706 | B | 20010623 | TW 1999-88116425 | 19990923 |
| PRAI | JP 1998-270673 | A | 19980925 | | |
| OS | MARPAT 135:218719 | | | | |
| GI | | | | | |



AB The invention relates to (a) a compound having a specific lactone-containing structure, (b) a polymer comprising units of the compound which is blended as a base resin to formulate a resist composition having better substrate adhesion, adequate penetration of developer and high etching resistance and especially suited as micro-patterning material for VLSI fabrication, (c) a method for preparing the polymer, (d) a resist composition comprising the polymer,

and (f) a patterning method using the resist composition A polymer is provided containing units of a novel lactone-containing compound (I), where R1 is H, Me or

CH₂CO₂R₅, R₂ is H, Me or CO₂R₅, R₃ is a straight, branched or cyclic alkyl group of 1-8 carbon atoms, R₄ is H or CO₂R₅, R₅ is a straight, branched or cyclic alkyl group of 1-15 carbon atoms, and X is CH₂, C₂H₄, O or S. The polymer is used as a base resin to formulate a resist composition having a high sensitivity, resolution and etching resistance.

ST lactone polymer resist patterning

IT Resists

(resist compns. containing lactone polymers and method of forming resist pattern using the composition)

IT Lactones

Polymers, reactions

RL: DEV (Device component use); NUU (Other use, unclassified); POF (Polymer in formulation); RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)

(resist compns. containing lactone polymers and method of forming resist pattern using the composition)

IT 84540-57-8

RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(PGMEA; resist compns. containing lactone polymers and)

IT 117458-06-7 166597-59-7 221901-64-0 290335-04-5

RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(dissoln. inhibitor; resist compns. containing lactone polymers and dissoln. inhibitor)

IT 14159-45-6 34684-40-7 71682-26-3 138529-81-4 138529-84-7

141573-11-7 161453-44-7 180801-55-2

RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(photoacid generator; resist compns. containing lactone polymers and

photoacid generator)

IT 102-71-6, Triethanolamine, reactions 102-82-9, Tributylamine
4942-47-6, Tricyclo[3.3.1.1^{3,7}]decane-1-acetic acid 211919-60-7
218770-96-8 357167-21-6
RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(resist compns. containing lactone polymers and)

IT 254900-07-7P 274247-93-7P 274247-95-9P 274247-97-1P 274247-99-3P
274248-01-0P 274248-03-2P 274248-05-4P
RL: DEV (Device component use); NUU (Other use, unclassified); RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(synthesis of lactone monomer for polymers for resist compns. and method of forming resist pattern using the composition)

IT 271599-53-2P 271599-54-3P 274247-94-8P 274247-96-0P 274247-98-2P
274248-02-1P 274248-04-3P **274248-06-5P** 274248-07-6P
274248-08-7P 274248-10-1P 274248-13-4P 274248-14-5P 274248-15-6P
274248-17-8P 274248-18-9P 274248-19-0P 274248-20-3P 274248-22-5P
274248-25-8P 274248-26-9P 274248-27-0P 274248-32-7P 274248-33-8P
274248-35-0P 274248-36-1P 274248-37-2P 274257-05-5P 274257-08-8P
274257-11-3P 274257-14-6P 274257-17-9P 274257-20-4P 357167-13-6P
357167-14-7P 357167-15-8P 357167-16-9P 357167-17-0P 357167-18-1P
357167-19-2P 357167-20-5P
RL: DEV (Device component use); NUU (Other use, unclassified); POF (Polymer in formulation); RCT (Reactant); **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; RACT (Reactant or reagent); USES (Uses)
(synthesis of lactone-containing polymers for **resist** compns. and method of forming **resist** pattern using the composition)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Becker; US 5541344 1996 HCAPLUS
- (2) Buchholz; US 4166915 1979 HCAPLUS
- (3) Buyniski; US 4018767 1977 HCAPLUS
- (4) Cawley; US 4188219 1980 HCAPLUS
- (5) Cohen; US 5185143 1993 HCAPLUS
- (6) Hafner; US 6008306 1999 HCAPLUS
- (7) Hungate; US 5811462 1998 HCAPLUS
- (8) Nozaki; US 5910392 1999 HCAPLUS
- (9) Taylor; US 6057083 2000 HCAPLUS

IT **274248-06-5P**
RL: DEV (Device component use); NUU (Other use, unclassified); POF (Polymer in formulation); RCT (Reactant); **SPN (Synthetic preparation)**; TEM (Technical or engineered material use); **PREP (Preparation)**; RACT (Reactant or reagent); USES (Uses)
(synthesis of lactone-containing polymers for **resist** compns. and method of forming **resist** pattern using the composition)

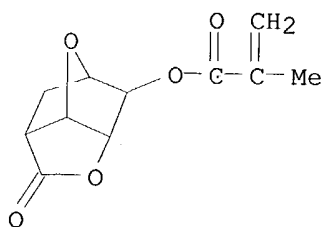
RN 274248-06-5 HCAPLUS

CN Butanoic acid, 3-[(2-methyl-1-oxo-2-propenyl)oxy]-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate and hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 274248-05-4

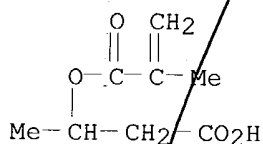
CMF C11 H12 O5



CM 2

CRN 271599-23-6

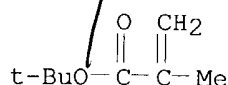
CMF C8 H12 O4



CM 3

CRN 585-07-9

CMF C8 H14 O2



L96 ANSWER 25 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2001:210133 HCAPLUS
 DN 134:245236
 ED Entered STN: 23 Mar 2001
 TI Photopolymerizable composition and chemical amplification-type photoresist using it
 IN Chung, Dong Hang; Choi, Sang Joon; Lee, Shi Hung; Lee, Sook
 PA Samsung Electronics Co., Ltd., S. Korea
 SO Jpn. Kokai Tokkyo Koho, 17 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM G03F007-039
 ICS C08F220-18; C08F222-06; C08F232-04; G03F007-004; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
 Section cross-reference(s): 38
 FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---------------|------|----------|-----------------|----------|
| JP 2001075285 | A2 | 20010323 | JP 2000-231006 | 20000731 |

| | | | | | |
|--|---------------|----|----------|----------------|----------|
| | US 6472120 | B1 | 20021029 | US 2000-628499 | 20000728 |
| | US 2002193542 | A1 | 20021219 | US 2002-218637 | 20020815 |
| | US 2003170563 | A1 | 20030911 | US 2003-383770 | 20030310 |

PRAI KR 1999-31060 A 19990729

US 2000-628499 A3 20000728

US 2002-218637 A3 20020815

AB The photosensitive polymer (weight average mol. weight 3000-100,000) is a copolymer of norbornene ester substituted with C1-12 aliphatic alc. and maleic acid anhydride. The polymer may have a norbornene derivative and an (meth)acrylic acid (ester) as other monomers. The chemical amplification resist comprises the polymer and 1-15 weight% (based on the polymer) of a photoacid generator. The composition shows good adhesion with the substrate, wettability with the developer, and good etching resistance.

ST photoresist norbornene ester maleic anhydride copolymer; photoacid generator photoresist

IT Photoresists
(photoresist composition containing polymer from norbornene ester and maleic anhydride and photoacid generator)

IT 102-71-6, Triethanolamine, uses 111-42-2, Diethanolamine, uses 121-44-8, Triethylamine, uses 1116-40-1, Triisobutylamine 25549-16-0, Triisooctylamine
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(photoresist composition containing polymer from norbornene ester and maleic anhydride and photoacid generator)

IT 256490-71-8P 329955-96-6P 329955-98-8P 329956-00-5P
329956-02-7P 329956-04-9P 329956-06-1P
329956-08-3P 329956-10-7P 329956-12-9P 329956-14-1P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(photoresist composition containing polymer from norbornene ester and maleic anhydride and photoacid generator)

IT 34684-40-7, Succinimidyl triflate 54730-01-7 66003-76-7, Diphenyliodonium triflate 66003-78-9, Triphenylsulfonium triflate 141339-54-0 162845-55-8, Triphenylsulfonium antimonate 250345-41-6 259229-69-1
RL: TEM (Technical or engineered material use); USES (Uses)
(photoresist composition containing polymer from norbornene ester and maleic anhydride and photoacid generator)

IT 133946-79-9P 154970-45-3P 256490-50-3P
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and polymerization of)

IT 1663-39-4, tert-Butyl acrylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of Bu norbornene ester)

IT 542-92-7, Cyclopentadiene, reactions 999-61-1, 2-Hydroxypropyl acrylate
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of hydroxypropyl norbornene ester)

IT 702-98-7, 2-Methyl-2-adamantanol 814-68-6, Acryloyl chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of methyladamantyl acrylate)

IT **329956-02-7P 329956-06-1P 329956-08-3P**
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
(photoresist composition containing polymer from norbornene ester and maleic anhydride and photoacid generator)

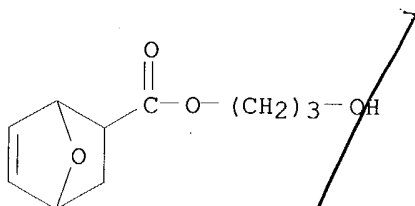
RN 329956-02-7 HCAPLUS

CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 3-hydroxypropyl ester, polymer with 2,5-furandione and 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 256490-50-3

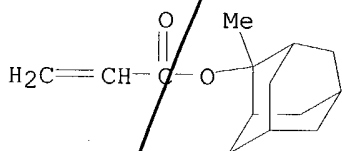
CMF C10 H14 O4



CM 2

CRN 249562-06-9

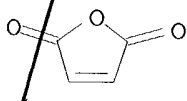
CMF C14 H20 O2



CM 3

CRN 108-31-6

CMF C4 H2 O3



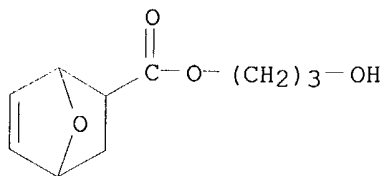
RN 329956-06-1 HCAPLUS

CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 3-hydroxypropyl ester, polymer with 1,1-dimethylethyl bicyclo[2.2.1]hept-5-ene-2-carboxylate, 2,5-furandione and rel-(1R,2R,4R)-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl 2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 256490-50-3

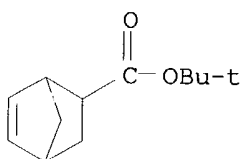
CMF C10 H14 O4



CM 2

CRN 154970-45-3

CMF C12 H18 O2

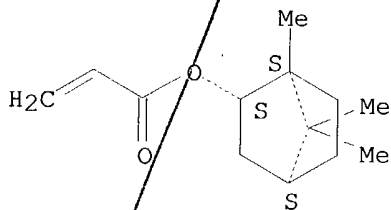


CM 3

CRN 5888-33-5

CMF C13 H20 O2

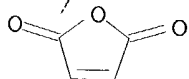
Relative stereochemistry.



CM 4

CRN 108-31-6

CMF C4 H2 O3



RN 329956-08-3 HCAPLUS

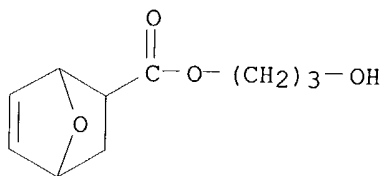
CN 7-Oxabicyclo[2.2.1]hept-5-ene-2-carboxylic acid, 3-hydroxypropyl ester, polymer with 1,1-dimethylethyl bicyclo[2.2.1]hept-5-ene-2-carboxylate, 2,5-furandione and 2-methyltricyclo[3.3.1.1^{3,7}]dec-2-yl 2-propenoate (9CI)

(CA INDEX NAME)

CM 1

CRN 256490-50-3

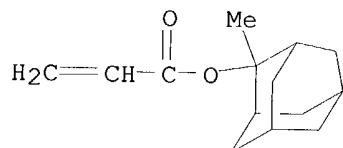
CMF C10 H14 O4



CM 2

CRN 249562-06-9

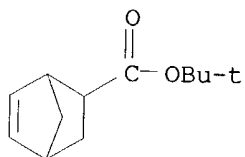
CMF C14 H20 O2



CM 3

CRN 154970-45-3

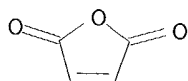
CMF C12 H18 O2



CM 4

CRN 108-31-6

CMF C4 H2 O3

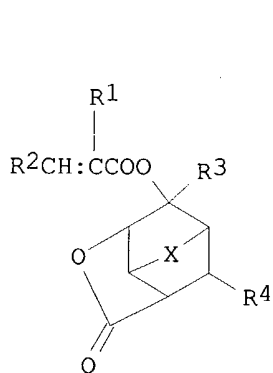


L96 ANSWER 26 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 2000:387290 HCAPLUS
 DN 133:36088
 ED Entered STN: 13 Jun 2000
 TI Novel lactone compound, its polymer, resist composition containing
 polymer, and pattern formation
 IN Hasegawa, Koshi; Nishi, Tsunehiro; Kaneo, Takeshi; Hatakeyama, Jun;
 Watanabe, Osamu
 PA Shin-Etsu Chemical Industry Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 42 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM C07D307-93
 ICS C07D493-18; C08F020-28; G03F007-039; H01L021-027
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 38

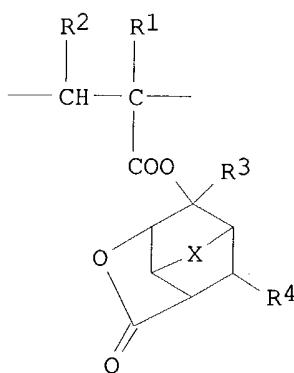
FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|------|----------------|------|----------|------------------|----------|
| PI | JP 2000159758 | A2 | 20000613 | JP 1999-255167 | 19990909 |
| | KR 2000023368 | A | 20000425 | KR 1999-40854 | 19990922 |
| | TW 442706 | B | 20010623 | TW 1999-88116425 | 19990923 |
| PRAI | JP 1998-270673 | A | 19980925 | | |

GI



I

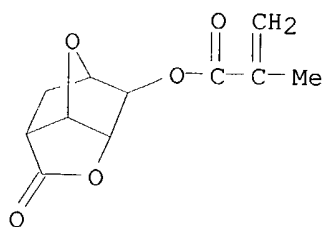


II

AB The lactone compound I [R1 = H, Me, CH2CO2R5; R2 = H, Me, CO2R5; R3 = C1-8 (branched) (cyclic) alkyl; R4 = H, CO2R5; R5 = C1-15 (cyclic) (branched) alkyl; X = CH2, CH2CH2, O, S] is claimed. A polymer with weight average mol.

weight 1000-500,000 having II (R1-4 and X are the same as in I) as a repeating unit is also claimed. The polymer is prepared by radical or anionic copolymn. of I with other compd(s). having C:C double bond. The resist comprises the polymer and an optional acid generator which generates acid by irradiation and organic solvents. The pattern is formed according to the steps; coating the resist composition on a substrate, irradiating the resist with high energy ray or an electron beam through a photomask after heat treatment, optionally post heat-treating, and developing the composition The resist composition shows high sensitivity, resolution, and etching resistance, and

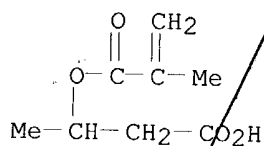
gives fine patterns with good profile.
 ST lactone acrylic polymer radiation resist
 IT Resists
 (radiation-sensitive; radiation-sensitive resist composition containing acrylic polymer having lactone structure)
 IT 14159-45-6 34684-40-7 66003-78-9 71682-26-3 138529-81-4
 138529-84-7 141573-11-7 161453-44-7
 RL: TEM (Technical or engineered material use); USES (Uses)
 (acid generator; radiation-sensitive resist composition containing acrylic polymer having lactone structure)
 IT 254900-07-7P 274247-93-7P 274247-95-9P 274247-97-1P 274247-99-3P
 274248-01-0P 274248-03-2P 274248-05-4P
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation and polymerization of)
 IT 120-74-1P, 5-Norbornene-2-carboxylic acid 92343-46-9P
 RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
 (preparation of acrylic compound having lactone structure)
 IT 64-18-6, Formic acid, reactions 79-10-7, Acrylic acid, reactions
 542-92-7, Cyclopentadiene, reactions 624-48-6, Dimethyl maleate
 920-46-7
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (preparation of acrylic compound having lactone structure)
 IT 274247-94-8P 274247-96-0P 274247-98-2P 274248-00-9P 274248-02-1P
 274248-04-3P **274248-06-5P** 274248-07-6P 274248-08-7P
 274248-10-1P 274248-11-2P 274248-13-4P 274248-14-5P 274248-15-6P
 274248-16-7P 274248-17-8P 274248-18-9P 274248-19-0P 274248-20-3P
 274248-21-4P 274248-22-5P 274248-24-7P 274248-25-8P 274248-26-9P
 274248-27-0P 274248-29-2P 274248-31-6P 274248-32-7P 274248-33-8P
 274248-34-9P 274248-35-0P 274248-36-1P 274248-37-2P 274257-05-5P
 274257-08-8P 274257-11-3P 274257-14-6P 274257-17-9P 274257-20-4P
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
 (radiation-sensitive **resist** composition containing acrylic polymer having lactone structure)
 IT **274248-06-5P**
 RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); **PREP (Preparation)**; USES (Uses)
 (radiation-sensitive **resist** composition containing acrylic polymer having lactone structure)
 RN 274248-06-5 HCAPLUS
 CN Butanoic acid, 3-[(2-methyl-1-oxo-2-propenyl)oxy]-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate and hexahydro-5-oxo-2,6-methanofuro[3,2-b]furan-3-yl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)
 CM 1
 CRN 274248-05-4
 CMF C11 H12 O5



CM 2

CRN 271599-23-6

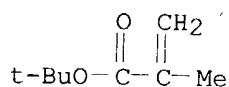
CMF C8 H12 O4



CM 3

CRN 585-07-9

CMF C8 H14 O2

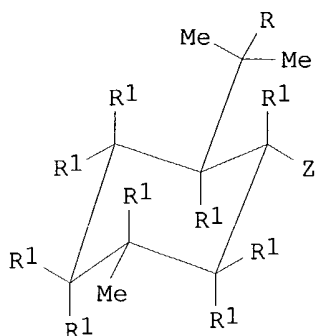


L96 ANSWER 27 OF 27 HCAPLUS COPYRIGHT 2004 ACS on STN
 AN 1996:190901 HCAPLUS
 DN 124:302576
 ED Entered STN: 04 Apr 1996
 TI Photosensitive material
 IN Shida, Naomi; Ushirogouchi, Toru; Naito, Takuya; Nakase, Makoto
 PA Kabushiki Kaisha Toshiba, Japan
 SO Ger. Offen., 371 pp.
 CODEN: GWXXBX
 DT Patent
 LA German
 IC ICM G03F007-004
 ICS G03F007-039
 ICA H01L021-312
 CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other
 Reprographic Processes)
 Section cross-reference(s): 30, 35
 FAN.CNT 1

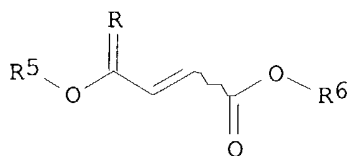
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|-------------|------|----------|------------------|----------|
| DE 19525221 | A1 | 19960125 | DE 1995-19525221 | 19950711 |

| | | | | |
|---------------------|----|----------|-----------------|----------|
| DE 19525221 | C2 | 20031113 | | |
| JP 08082925 | A2 | 19960326 | JP, 1995-185046 | 19950629 |
| JP 3417733 | B2 | 20030616 | | |
| US 6060207 | A | 20000509 | US 1995-499974 | 19950710 |
| PRAI JP 1994-158512 | A | 19940711 | | |

GI



I



II

- AB The title material comprises a compound containing a monomer from an acrylate ester of a terpenoid compound $\text{CH}_2\text{C}(\text{R}_4)\text{CO}_2\text{R}_3$ [$\text{R}_3 = \text{I}$ ($\text{R} = \text{H}$, hydrocarbon; $\text{R}_1 = \text{H}$, halogen, hydrocarbon; hydroxyl, alkoxy, amino, imide, amide, sulfonyl, carboxyl, carbonyl, sulfonamide where 2 adjoining groups may form ring)]. The material has improved absorption for shorter wavelength light.
- ST photosensitive photoresist terpenoid compd polymer
- IT Terpenes and Terpenoids, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (photoresist composition)
- IT Resists
 (photo-, terpenoid compound polymer)
- IT 174804-54-7 174804-56-9 174804-58-1 174804-60-5 174804-62-7
 RL: TEM (Technical or engineered material use); USES (Uses)
 (photoacid generator; photoresist composition)
- IT 4835-96-5P, Menthyl acrylate 38582-32-0P, Citronellyl methacrylate
 45160-93-8P 92419-65-3P 162361-90-2P
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT
 (Reactant or reagent)
 (photoresist composition)
- IT 31369-44-5P 57570-06-6P 69175-26-4P 152218-72-9P 174803-05-5P
 174803-07-7P 174803-08-8P 174803-09-9P 174803-10-2P 174803-12-4P
 174803-13-5P **174803-15-7P** 174803-16-8P 174803-18-0P
 174803-20-4P 174803-22-6P 174803-24-8P 174803-26-0P 174803-28-2P
 174803-30-6P 174803-32-8P 174803-34-0P 174803-36-2P 174803-38-4P
 174803-40-8P 174803-42-0P 174803-43-1P 174803-44-2P 174803-45-3P
 174803-46-4P 174803-47-5P 174803-48-6P 174803-49-7P
174803-50-0P 174803-51-1P 174803-52-2P 174803-53-3P
 174803-54-4P 174803-55-5P 174803-56-6P 174803-57-7P 174803-58-8P
 174803-59-9P 174803-60-2P 174803-61-3P **174803-62-4P**
 174803-63-5P 174803-64-6P 174803-65-7P 174803-66-8P 174803-67-9P
 174803-68-0P 174803-69-1P 174803-70-4P 174803-71-5P 174803-72-6P
 174803-73-7P **174803-74-8P** 174803-75-9P 174803-76-0P
 174803-77-1P 174803-78-2P 174803-79-3P 174803-80-6P 174803-82-8P
 174803-83-9P 174803-85-1P 174803-86-2P **174803-88-4P**
 174803-90-8P 174803-92-0P 174803-94-2P 174803-96-4P 174803-98-6P

| | | | | |
|---------------------|---------------------|--------------|---------------------|--------------|
| 174804-00-3P | 174804-02-5P | 174804-04-7P | 174804-06-9P | 174804-08-1P |
| 174804-10-5P | 174804-12-7P | 174804-14-9P | 174804-16-1P | 174804-17-2P |
| 174804-18-3P | 174804-19-4P | 174804-20-7P | 174804-21-8P | 174804-22-9P |
| 174804-23-0P | 174804-24-1P | 174804-25-2P | 174804-26-3P | |
| 174804-27-4P | 174804-28-5P | 174804-29-6P | 174804-30-9P | 174804-31-0P |
| 174804-32-1P | 174804-33-2P | 174804-34-3P | 174804-35-4P | |
| 174804-36-5P | 174804-37-6P | 174804-38-7P | 174804-39-8P | |
| 174804-40-1P | 174804-41-2P | 174804-42-3P | 174804-43-4P | 174804-44-5P |
| 174804-45-6P | 174804-46-7P | 174804-47-8P | 174804-48-9P | |
| 174804-49-0P | 174804-50-3P | 174804-51-4P | 174804-52-5P | 174804-63-8P |
| 174804-64-9P | 174804-65-0P | 174804-66-1P | 174804-67-2P | 174804-68-3P |
| 174804-69-4P | 174804-70-7P | 174804-71-8P | 174804-72-9P | 174804-73-0P |
| 174804-74-1P | 174804-75-2P | 174804-76-3P | 174804-77-4P | |
| 174804-78-5P | 174804-79-6P | 174804-80-9P | 174804-81-0P | 174804-82-1P |
| 174804-83-2P | 174804-84-3P | 174804-85-4P | 174804-86-5P | |
| 174804-87-6P | 174804-88-7P | 174804-89-8P | 174804-90-1P | |
| 174804-91-2P | 174951-62-3P | 174951-63-4P | 174951-64-5P | 174951-65-6P |
| 174951-66-7P | 174951-67-8P | 174951-68-9P | 174951-69-0P | 174951-70-3P |
| 174951-71-4P | 174951-72-5P | 174951-73-6P | 174951-74-7P | 174951-75-8P |
| 174951-76-9P | 174951-77-0P | 174951-78-1P | 174951-79-2P | 174951-80-5P |
| 174951-81-6P | 174951-82-7P | 174951-83-8P | 174951-84-9P | 174951-85-0P |
| 174951-86-1P | 174951-87-2P | 174951-88-3P | 174951-89-4P | 174951-90-7P |
| 174951-91-8P | 174951-92-9P | 174951-93-0P | 174951-94-1P | 174951-95-2P |
| 174951-96-3P | 174951-97-4P | 174951-98-5P | 174951-99-6P | 174952-00-2P |
| 174952-01-3P | 174952-02-4P | 174952-03-5P | 174952-04-6P | 174952-05-7P |
| 174952-06-8P | 174952-07-9P | 174952-08-0P | 174952-09-1P | 174952-10-4P |
| 174952-11-5P | 174952-12-6P | 174952-13-7P | 174952-14-8P | 174952-15-9P |
| 174952-16-0P | 174952-17-1P | 174952-18-2P | 174952-19-3P | 174952-20-6P |
| 174952-21-7P | 174952-22-8P | 174952-23-9P | 174952-24-0P | 174952-25-1P |
| 174952-26-2P | 174952-27-3P | 174952-28-4P | 174952-29-5P | 174952-30-8P |
| 174952-31-9P | 174952-32-0P | 174952-33-1P | 174952-34-2P | 174952-35-3P |
| 174952-36-4P | 174952-37-5P | 174952-38-6P | 174952-39-7P | 174952-40-0P |
| 174952-41-1P | 174952-42-2P | 174952-43-3P | 174952-44-4P | 174952-45-5P |
| 174952-46-6P | 174952-47-7P | 174952-48-8P | 174952-49-9P | 174952-50-2P |

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(photoresist composition)

| | | | | | |
|----|--------------|--------------|--------------|--------------|--------------|
| IT | 174952-51-3P | 174952-52-4P | 174952-53-5P | 174952-54-6P | 174952-55-7P |
| | 174952-56-8P | 174952-57-9P | 174952-58-0P | 174952-59-1P | 174952-60-4P |
| | 174952-61-5P | 174952-62-6P | 174952-63-7P | 174952-64-8P | 174952-65-9P |
| | 174952-66-0P | 174952-67-1P | 174952-68-2P | 174952-69-3P | 174952-70-6P |
| | 174952-71-7P | 174952-72-8P | 174952-73-9P | 174952-74-0P | 174952-75-1P |
| | 174952-76-2P | 175014-46-7P | 175014-47-8P | 175014-48-9P | 175014-49-0P |
| | 175014-50-3P | 175131-63-2P | 175131-64-3P | 175738-65-5P | 175738-68-8P |
| | 175738-71-3P | 175738-72-4P | 175738-73-5P | 175738-74-6P | 175738-77-9P |
| | 175738-78-0P | 175738-79-1P | 175738-80-4P | 175738-82-6P | 175738-83-7P |
| | 175892-24-7P | 176017-34-8P | 176017-35-9P | 176017-36-0P | 176017-37-1P |
| | 176017-38-2P | 176017-39-3P | 176017-40-6P | 176017-41-7P | |

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(photoresist composition)

| | | | |
|----|---------------------|---------------------|---------------------|
| IT | 174803-15-7P | 174803-50-0P | 174803-62-4P |
| | 174803-74-8P | 174803-88-4P | 174804-24-1P |
| | 174804-36-5P | 174804-48-9P | 174804-75-2P |
| | 174804-87-6P | | |

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(photoresist composition)

RN 174803-15-7 HCAPLUS

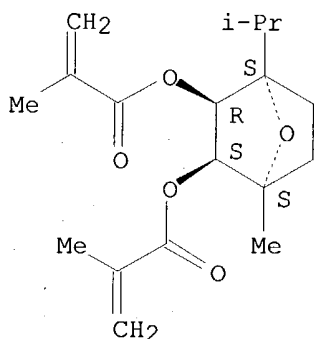
CN 2-Propenoic acid, 2-methyl-, 1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl ester, (endo,endo)-, homopolymer (9CI)
(CA INDEX NAME)

CM 1

CRN 174803-14-6

CMF C18 H26 O5

Relative stereochemistry.



RN 174803-50-0 HCAPLUS

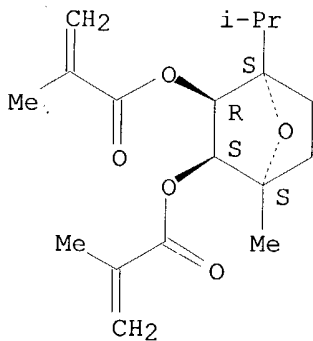
CN 2-Propenoic acid, 2-methyl-, 1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl ester, (endo,endo)-, polymer with oxiranyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174803-14-6

CMF C18 H26 O5

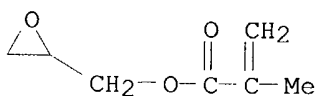
Relative stereochemistry.



CM 2

CRN 106-91-2

CMF C7 H10 O3



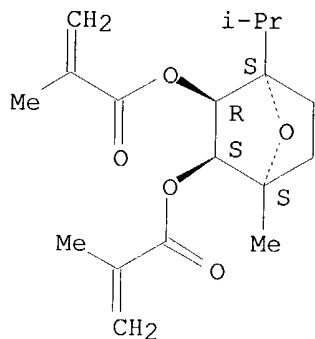
RN 174803-62-4 HCAPLUS
 CN 2-Propenoic acid, 2-methyl-, 1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl ester, (endo,endo)-, polymer with 2-propenyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174803-14-6

CMF C18 H26 O5

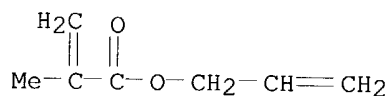
Relative stereochemistry.



CM 2

CRN 96-05-9

CMF C7 H10 O2



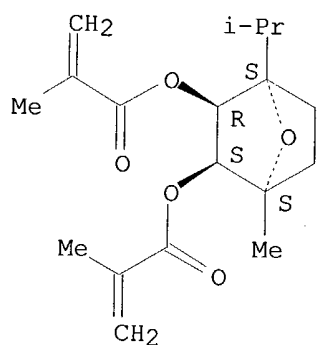
RN 174803-74-8 HCAPLUS
 CN 2-Propenoic acid, 2-chloro-, 2,2,2-trifluoroethyl ester, polymer with (endo,endo)-1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl bis(2-methyl-2-propenoate) (9CI) (CA INDEX NAME)

CM 1

CRN 174803-14-6

CMF C18 H26 O5

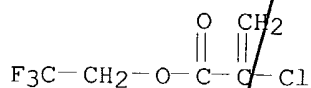
Relative stereochemistry.



CM 2

CRN 74359-02-7

CMF C5 H4 Cl F3 O2



RN 174803-88-4 HCAPLUS

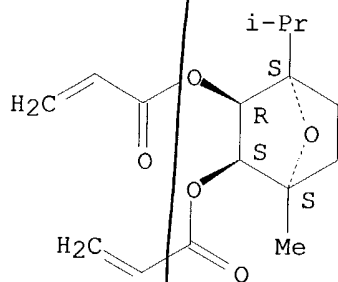
CN 2-Propenoic acid, 1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl ester, (endo,endo)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 174803-87-3

CMF C16 H22 O5

Relative stereochemistry.



RN 174804-24-1 HCAPLUS

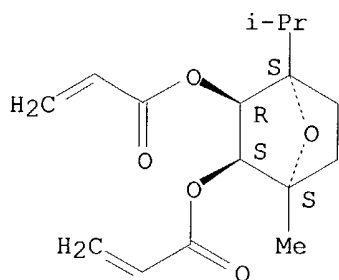
CN 2-Propenoic acid, 2-methyl-, oxiranylmethyl ester, polymer with (endo,endo)-1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174803-87-3

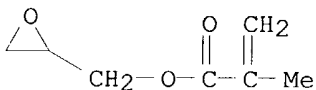
CMF C16 H22 O5

Relative stereochemistry.



CM 2

CRN 106-91-2
CMF C7 H10 O3

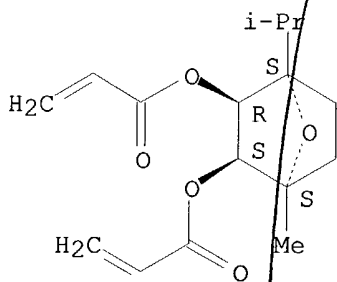


RN 174804-36-5 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, 2-propenyl ester, polymer with
(endo,endo)-1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl
di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

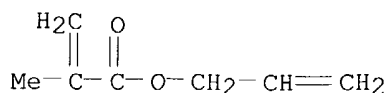
CRN 174803-87-3
CMF C16 H22 O5

Relative stereochemistry.



CM 2

CRN 96-05-9
CMF C7 H10 O2



RN 174804-48-9 HCAPLUS

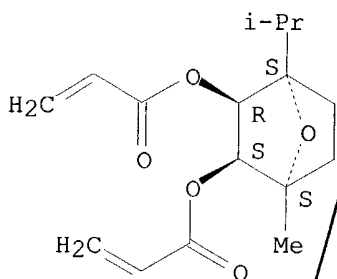
CN 2-Propenoic acid, 2-chloro-, 2,2,2-trifluoroethyl ester, polymer with (endo,endo)-1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174803-87-3

CMF C16 H22 O5

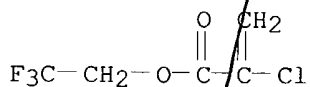
Relative stereochemistry.



CM 2

CRN 74359-02-7

CMF C5 H4 Cl F3 O2



RN 174804-75-2 HCAPLUS

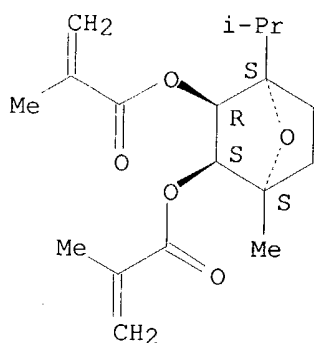
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl 2-methyl-2-propenoate and (endo,endo)-1-methyl-4-(1-methylethyl)-7-oxabicyclo[2.2.1]heptane-2,3-diyl bis(2-methyl-2-propenoate) (9CI) (CA INDEX NAME)

CM 1

CRN 174803-14-6

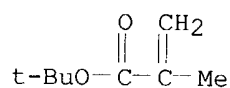
CMF C18 H26 O5

Relative stereochemistry.



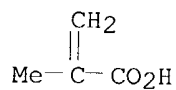
CM 2

CRN 585-07-9
CMF C8 H14 O2



CM 3

CRN 79-41-4
CMF C4 H6 O2

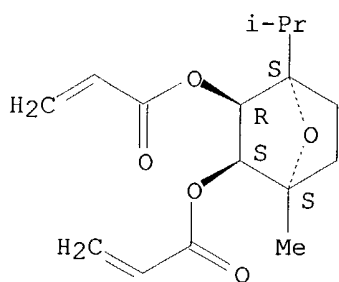


RN 174804-87-6 HCAPLUS
CN 2-Propenoic acid, 2-methyl-, polymer with 1,1-dimethylethyl
2-methyl-2-propenoate and (endo,endo)-1-methyl-4-(1-methylethyl)-7-
oxabicyclo[2.2.1]heptane-2,3-diyl di-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174803-87-3
CMF C16 H22 O5

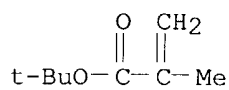
Relative stereochemistry.



CM 2

CRN 585-07-9

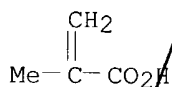
CMF C8 H14 O2



CM 3

CRN 79-41-4

CMF C4 H6 O2



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